MICROCOPY RESOLUTION TEST CHART
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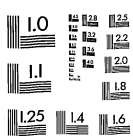

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Thomas A. Edison Papers

A SELECTIVE MICROFILM EDITION

PART IV
(1899–1910)

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University Publications of America
Bethesda, MD
1999

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Thomas A. Edison Papers
at
Rutgers, The State University
endorsed by
National Historical Publications and Records Commission
18 June 1981

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The original documents in this edition are from the archives at the Edison National Historic Site at West Orange, New Jersey.

ISBN 0-89093-703-6

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Notebook, N-10-02-24

This undated notebook was probably used during February 1910 and was annotated at least once after that date. All entries are by Edison, and many entries were later marked "Ent[ered]" and copied by him into the undated notebook, N-19-04-20.1. Included are a log of storage battery cell tests and extensive notes regarding the chemical reactions involved in the discharge and charge of the battery cells. Inserted into the book are loose notes by Edison and a one-page entry by Walter E. Holland, dated February 1910, regarding the cell tests. The front cover is marked "Iron" and is labeled "Iron Book." The pages are unnumbered. Approximately 60 pages have been used.

		Rate 300	Cold	Rate 750	
6 Mi Tubes			½	I v	½ v
5 grams sem percent Hg	4553	1910	2750	50	100
2% Hg	4554	1920	2775	37	100
				44	
3%	4555	1980	2905	62	125
	4556	1950	2870	62	125
4%	4557	1990	2950	825	1212
	4558	1950	2895	262	412
5%	4559	1915	2840	1037	1537
	4560	1950	2890	1050	1550
				1040	
6%	4561	1885	2790	1150	1787
	4562	1925	2840	1150	1775
7%	4563	1915	2840	1312	1937
	4564	1945	2930	1300	1937
8%	4565	1895	2780	1387	2050
	4566	1885	2800	1312	1975
9%	4567	1835	2685	1337	1987
	4568	1865	2735	1287	1912
10%	4569	1835	2675	1300	1937
	4570	1775	2580	1250	1873

50						100			
	300		750			300		750	
			1½	½				1½	½
4553	1635	2230	825	1312		1530	2130	162	250
4554	1700	2375	950	1437		1545	2135	425	575
								293	
4555	1845	2670	1275	1937		1720	2510	1037	—
4556	1740	2530	1025	1537		1640	2450	75	112
			650					538	
4557	1845	2715	1312	2000		1665	2460	962	1425
4558	1800	2600	1125	1700		1645	2375	200	312
			1237					580	
4559	1860	2700	1212	1875		1610	2310	775	1162
4560	1845	2670	1325	2012		1616	2285	550	1237
			1270						
4561	1885	2700	1262	1987		1630	2295	950	1412
4562	1850	2700	1412	2112		1630	2365	437	1537
			1335						
4563	1885	2770	1500	2262		1600	2315	837	1287
4564	1850	2730	1350	2125		1600	2300	525	1250
4565	1845	2685	1475	2237		1530	2200	837	1300
4566	1840	2660	1487	2212		1560	2260	900	1387
4567	1800	2610	1425	2187		1505	2145	737	1187
4568	1780	2620	1425	2150		1600	2350	962	1537
4569	1750	2475	1450	2212		1560	2235	950	1462
4570	1720	2515	1362	2087		1485	2100	812	1237

150				
300		750		300
		1½	½	Hour
900	1190	187	275	1725
1010	1350	237	350	1925
		212		
1410	2050	350	550	2525
1330	1940	267	450	400
		318		
1360	2000	437	675	2410
1240	1815	212	337	1725
		324		
1325	1815	550	860	1825
1320	1845	650	987	2200
		600		
1390	1965	512	800	2400
1335	1900	437	675	2105
		444		
1325	1845	437	687	2400
1260	1810	512	812	2130
		474		
1200	1685	525	825	2205
1320	1900	737	1162	2375
		631		
1150	1595	412	825	1645
1265	1830	650	1025	2140
		53		
1150	1585	500	775	1840
1195	1680	662	1050	1885
		540		

200 Run

	300	1/2	750	1/2	Hot
4553	985	1200	112	200	1320
4554	1050	1240	187 / 149	275	1385
4555	1385	1990	412	650	1280
4556	1365	1990	237 / 324	375	1503
4557	1425	2090	525	812	1555
4558	1345	1890	112	187	1335
4559	1440	2040	575	887	1315
4560	1315	1845	225	362	1885
4561	1350	1860	112	225	1940
4562	1310	1840	100	157	1725
4563	1300	1815	125	200	1810
4564	1300	1880	225	375	1665
4565	1155	1580	162	275	1860
4566	1245	1765	500	787	1880
4567	1230	1655	150	275	1450
4568	1320	1910	187	337	1615
4569	1185	1625	137	237	1620
4570	1200	1690	337	562	1545

250 Run

	300	1/2	750	1/2	Hot	
2/1	585	635	125	200	1160	4568 } dredging fully
	765 / 675	955	225 / 175	287	1215	4564 } took out 72 & put on hot plate 48 hours — Remoulded & Run Reg — No better
3/1	1110	1550	362	512	1780	
	1090 / 1100	1525	212 / 287	325	1735	
4/1	1150	1615	300	437	2200	4565 Same as above
	980 / 1065	1315	125 / 212	200	1850	4566 Except worked free of Roll after discharge
5/1	1140	1660	462	700	1635	Improved 19% on 14
	1060 / 1100	1440	362 / 412	525	1815	
6/1	1100	1500	350	475	1640	4567-8 Same as 4565-Then Corrugated very fine —
	1050 / 1075	1425	287 / 318	450	1640	Improved 14 & 16%
7/1	1050	1400	200	350	1660	
	1130 / 1090	1550	300 / 250	462	1640	
8/1	940	1250	225	337	1800	
	1065 / 1002	1480	500 / 362	750	1770	
9/1	950	1235	225	375	1350	
	1060 / 1005	1460	237 / 231	375	1580	
10/1	865	—	125	275	1500	
	980 / 922	—	450 / 287	687	1460	

Iron book 4508 mm
Remarks
4573 to 4579 Tamped with
Various weights and runs
~~about~~ 650 Runs, gave
about the same results

			600 Run	
			1V	X
6 lbs	13 oz	10,090	2070	2500
			2.00	2.400
5 lb				

Very blind see book
+ study out

50 — 69.28%

		1V 750	1V 300	½V	1V 750	1V 300	½V	
1196 Fe Mix 5 gms on pockets that have NOT been nickel plated	4589	1112	1790	2525	1225	1800	2600	
	4590	1100	1745	2510	1125	1710	2500	
	4591	1150	1790	2570	1125	1700	2400	
1196 Mix Fe 15% Bismuth hydroxide mixed 5 gms of each	4592	237	280	495	362	615	900	Co
	4593	237	280	495	400	700	985	
1196 Fe - 25% Bismuth hydroxide 5 gms	4594	175	220	525	250	460	820	Co
	4595	200	235	555	337	645	1050	
Fe No Hg mixed 25% Bismuth hydroxide put up 4 tablets 5 gms	4596	12	60	285	12	45	235	Co
	4597	12	65	300	12	45	200	
1196 put up in pockets that have been silver plated 5 gms	4606	925	1640	2380	250	1165	1550	75.1%
	4607	1000	1665	2440	687	1590	2295	
Dup 4606 Except use Iron that has No Hg	4608	1350	1940	2815	1237	1900	2810	69
	4609	1225	1885	2635	975	1800	2500	
1196 Fe mixed with 5% very finely divided Red Oxide iron	4610	875	1490	2150	687	1300	1800	
	4611	900	1535	2180	912	1720	2225	

	100	1/2	1ft	150	1/2
4589	1500	2145	1420	1385	1945
4590	1375	1950	1325	1205	1830
4591	1560	2235	1400	1360	1920
4592					
4593					
4594					
4596					
4606	470	555	1145		
4607	500	575	1175		
4608	125	150	1150		
4609	25	50	1150		
4610	785	1000	1155		
4611	1100	1430	1195		

This appears to should
Cannot use ~~Iron~~ Iron, as
Neg in Ni bolling
Must use Cadmium Cobalt
or something else
used in tail 4 yr tube when Gr used

In big cell the room loses
Capacity in last a yr or
hence use not no results.
in big Cell - with Bromuth

5 ~~[illegible]~~ tube with flap
~~[illegible]~~ of Cadmium
Hydroxide, dry - 8.990 wt

50th Run

IV	1/2
1010	1020 -

Run as Iron

~~Mixture for [illegible] was mixed
Seems to be [illegible] quantity
[illegible]~~

~~4 [illegible] 5% [illegible] 50 100 150
590 425~~

Bromuth added to fix
to Bad, 5% B.O.
10% & 15% used

50th Run

	IV	1/2
5%	590	425 -
10%	1175	400 -
15%	2130	3075

5 Gram per tube

100th Run

	IV	1/2
5	45	105 -
10	85	205 -
15 -	85 -	290

150

	IV	1/2
5	15 -	45 -
10	25 -	110
15	15 -	160

4.080 gram pocket of seed iron from igniting Nitrate gives no Current on reading

Ditto Magnetic Oxide from reduction wt Ferric hydrate No Current

---

Red Fe Mx - pressed into Cakes at 300 atmospheres put in pockets loose not crimped or Corrugated 4 mi tube 5 gm pockets

5 oth Run

IV	1/2	Bat
30	75	27
60	100	27

Oxide Cadmium in Tubes

Run as 7½ — 10.514 wt
10.432

50 Run

IV	1/2
420	430
425	434

Ent

Cadmium Metal reduced by Zn — put in Tubes with flake run as Grows

15.740 wt
16.110

50 th

	1/2
855	830
1160	1285

400 th Run

	1/2
2200	3425
2200	3425
2440	3790

6412

450 Run

	1/2
1790	3040
1740	2975
2000	3325

50

Dup 4610 Except 10% Red Oxide Fe	4612	1V 750	1V 300	½ V	1V 750	1V 300	½	
	4613	887	1575	2200	650	1500	2000	75%
		1000	1650	2395	907	1645	2260	72.8%
Dup 4610 Except 20% Red Ox Fe	4614	1075	1750	2445	1050	1795	2400	74⅓
	4615	1062	1745	2400	1087	1735	2360	73.5
Dup 4610 Except 33% Red Ox Fe	4616	575	1300	1760	400	1300	1655	78.5
	4617	775	1445	1930	400	1300	1625	
Fe with Na Hg mixed with 25% Red Ox Fe	4618	1000	1650	2315	825	1000	1620	61%
	4619	1000	1535	2215	850	1435	1945	
11% mixed 10% Cerio Ox from igniting Ceric Nitrate 5 gm	4620	912	1590	2130	500	1285	1540	
Dup 4620 15% Cerio Ox	4621	875	1445	2030	112	550	660	
Dup. 4620 25% Cerio Ox	4622	712	1300	1700	50	340	470	

	100	5/2	Ft
4612	1025	1300	1250
4613	1290	1730	1220
4614	1375	1800	1330
4615	1400	1855	1250
4616	840	1010	1145
4617	850	1060	1145

		Gd		½	50	½	100	½	150	½
Fe. 5 gram deep plate. scraped 10 mins / $BiCl_3$ acetone Ang. dried then 6 o'c KOH, ie. ingressed against 2 litres water 6 hours treated $BiCl_3$ acetone 21K2Li	4510	2140		2550	2015	2550	1995	2555	1945	2520
5 gram deep plate soak 10 mins $HgCl_2$ in Acetone, dried, 6 o'clock KOH, dried ingressed 21K2Li against 2 litres treated $BiCl_3$ acetone	4511	2180		2470	2045	2470	1980	2485	1825	2450
5 gram deep plate soaked equal parts $HgCl_2$ + $BiCl_3$ acetone, dried, part in Ammonia ingressed - then exposed 2 litres treated $BiCl_3$ acetone. 21K2Li	4512	2145		2445	2000	2490	Pinhole in plate 2035	2540	2020	2715
5 gram deep plate - dipped 10 mins $HgCl_2$ acetone, then ammonia, then washed in KOH, ingressed against 2 litres treated $BiCl_3$ acetone 21K2Li	4513	2180		2465	2000	2440	Pinhole in plate 1985	2505	1855	2665
5 gram deep plate treated 10 mins $HgCl_2$ acetone dried, part in Ammonia 1 hour, washed out, then exposed 2 litres $BiCl_3$ acetone - Ingressed 21K2Li	4514	2200		2455	2025	2475	2025	2565	1965	2715
~~5 gram deep plate~~ Oil -										
5 gram deep plate soaked equal pts $HgCl_2$ & $BiCl_3$ acetone - dried then KOH, ingressed against 2 litres acetone $BiCl_3$ acetone - 21K2Li	4516	2180		2445	2025	2425	1895	2520	1740	2490

	200	1/2	250		
4510	1825	2365	1755	2270	
4511	1715	2250	1635	2490	
4512	1800	2380	1760	2340	
4513	1715	2490	1640	2430	
4514	1830	2450	1830	2440	
4516	1575	2315			

Pockets of Fz - End Loading

Wt 1050 - #4646 - 7 lb Eight on lamp

Cold Test, 1 Wt 10500

75 Fahr			42 Fahr	
	½			½
2830	3990		2310	3520
2930	4115		2590	3635
2675	3735		2240	3395

50	100	250	500	550	
3080	3100	2900	2090	2400	½
3135	3150	2800	2095	2000	3325
3010	2900	2585	2260	2300	3040
					3454

---

ditto 8 lb cat Wt 10800

75 Fahr			42 Fahr	
	½			½
2650	3700	71½%	1890	2745
2580	3400		1950	2850
2475	3535		1675	2460

50	100	250	500	550	
2990	3100	2680	1920	1970	½
2760	2760	2585	1820	1800	3125
2865	2785	2535	1925	2100	3160
					3050

ditto 10 lb col

1st 2 pkts 11.000
Lunch 10.00

10.832

75 Fahr 1/3

2510	3600
2500	3550
2380	3400

42 Fahr 1/2

~~2400~~	3520
1992	1995
2185	3165

50	100	250	500 1/4	550 1/2
3060	3120	2890	2465 3000	2800 3630
2945	2980	2800	2100 3470	2400 3375
2900	2860	2820	2150 3450	2260 3265

ditto 14 lb col. 11.500

75 Fahr 1/2

2300	3000
2450	3475
2480	3450

42 Fahr 1/2

2190	3150
2305	3400
2195	3180

50	100	250	500 1/2	550 1/2
2815	2820	2800	2395 3530	2300 3270
3075	2945	2900	2260 3530	2400 3375
3075	2955	2875	2100 3215	2050 3100

Req 2 Bat from Brackels — 005 stock
Crimped only not corrugated

75 Fahr	1/2	35 Fahr	
2365	3010	1075	9.000 Wt
2570	3595	1700 S	

Loaded in 003 Iron
Crimped not corrug
Crimped between flat surfaces
not reg dia —

		9.590	wt
		10.460	

75 Fahr	1/2	35 Fahr	
B 2600.	3605	1095	
X 1550-	2365	1090	

B 2.66 Temp
X 3.66 Temp —

Iron ring
3 lb wt fall 43/4 inches

	wt.
~~[illegible]~~	
on fifty reads	6.430
	6.174
80 "	6.290
	6.280
120 "	5.490
	5.745
	6.170
140 "	7.195
	7.420

Iron Fe_2O_3 from above ppt.
reduced when 100 mesh reduced
in H. Cooled in H atmosphere
by Nitrogen Cold
100% H_2O — Clogged and burned
8.380 } wt.
8.670 }

Run Rig 75 when at 35 Fahr 3 ice weeks

75	1/2	35 Fahr	1/2
2880	4225		
2970	3970	mean 1930	1680

Duplicate

75	1/2	35 Fahr	
2630	3990	1790	1650
2600	3990	1360	1300

Reg Storage battery 7/2

8250 grms

C 75 annealed, crimped — Corrugated 35 Fahr

1/2

2025 2870 — 1440

8.500 grms

annealed + crimped

75 Fahr — 35 Fahr

1/2

2280 3390 — 1665

7.000 grms

annealed crimped — Corrugated

75 Fahr — 35 Fahr

1/2

1950 2850 — 1330

7.800

Crimped - annealed

75 Fahr — 35 Fahr

1/2

2230 3320 — 1655

8500 cot

Crimped annealed —

75 Fahr — 35 Fahr

1/2

2500 3885 — 1925

8350 cot from

Crimped annealed + Corrugated

75 Fahr — 35 Fahr Decreased around cell

1/2

2100 2970 — 1445 —

Annealing was done in H cot

5 Bat Co — Crimping 15 atmos

Corrugs 200 atmos —

Calliper

Top	Mid	bot
112	112	109
118	116	112
101	102	100
111	110	105
119	120	116
116	117	114

We tried dup the first all Corrugated but it was from of Nunuk home

Meohanical necessary bonding bad (?)

Anhydrous Co peroxide
5 grams rem as 7a

	1/2	
Cols	820	990
	1030	1240
	50th	to V
	1/2	
	635	850
	935	1035

Reg 7a pocket. Silver plated Bad

ditto Copper plated OK

ditto Gold " Bad

ditto Cobalt " Improvement

" Tin OK

" Cadmium Improvement

" Antimony Considerably Improved

Looks as if more degable metals load on pocket's
B. ag all all grind native

Brass plated pocket Cadet Reg

Ferrous Ammonium Sulphate
Weaker than C. ettay 1/2
ignited very light 3 grams
pocket 443 mesh to gram

	1/2	
1330	1935	Water long lat run to pickup
1365	1950	

This is due to excessive fumes

Ignited 80% E. 20 Cu — 5%/Hgo
3.59 to pocket 410 Mesh to gram
This is very fine transition

Drop grey NH4 Mesh
3.5 grams —
fumes — 1 gram 50 —
1625 — 462 Mesh per gram

Holland Soy 68%, Wall Stay

Thank Co absorbs the Hgo
powder, acquires
odd shade in fumes —

After Taking 20 B. Cells
I remark Irons go bad
to Volt in Bismuth cells
but OK to 1/2 V
Irons give good hot
Capacity which falls on
Cold test —

Jnl Chem Soc 1889

Cobalt is less poisonous
than Iron —
Most is Nickel
Ni
Fe
Co least

plating iron packets with
Cobalt probably good
plate Nickel

I remark that Cobalt
plated Irons offer many
Ohms not very much
lower than Nickel
plated Irons

Bismuth Potassium Thiosulphate
is a precipitate
Na Sort Sol

Metantimonate of Potassium
gives colder poisons of
Metantimonate of Sodium
Even dilution —

All dry cells Cadies
Contains Ammonia

K Stearate ~~[illegible]~~ dot in 21 KOH, but very slight in 21 KOH saturated with LiOH

Nickel strips (blanked) 1/2" apart
1 amp — Little Cell
90 cc 40 percent KOH
Thermometer in each cell

Run 2 hours with following rise Amp

15%	Rise	10.3 deg Fah
17		10.6 "
19		11.5 "
21		11.3 "
23		12.5
25		10.9
27		10.1

With same percentage of KOH but with 2 grams LiOH in the Cell

15%	Rise of	11.0 deg
17	"	9.7
19		11.2
21		10.9
23		10.9
25		11.9
27		10.1

Get surge thus and good

E 18 part grids

Armco 30 amp Table,

	Cell Amp	
73	72.5	
75	74.5	25 amp hours
75	94	50
75	98	75
75	101.5	100
76	105.2	125
78	108	150
80	111	175
80	112	200
80	114	225

40 to 70 amp rate about same after 75 amp

50 rate 225 above

1	10.5
1	11.2
1	12.0
1	10 amp in temp
1	50 "
2	225

If we chg E18 at

30 amp heat at end 1.225 temp 12° above Atmos
40 17.5
50 23.7

fully chgd E18 Cold

on dischg 30 amp
125 amperes Taken out
Air temp 76.5
Cell " 90 amp
gave 1.24 to V

7c 534a —
Dischg at 800 ma after long chg.

Dischg at Normal Temp
1350

Dischg 110 deg
2575

" 121 Deg
3000.

" 135 Deg
2570

Ext

Ether capacity is below 1.15-V a very arrow Drop

Short Charge

A Cell 597 -
Short chg
Chg normal dis 135 Tests
gives higher Capacity & 3/100 higher
Volt. than chg & discharge Normal

If chg at 135 Tests & discharge
Normal Capacity is only
65% of chg Normal
& Voltage is less 1.18
average against 1.27

Long Charge

Discharge voltage in this case
are about same
But cells chg hot lose 5%
less Capacity - than chg & discharge
Normal & chg charge
Hot,
the Long chg acts entirely
different from short chg
Why

Yellowish sediment on hard-
rubber in tank 96 is
a very basic permanganate of Iron

Reg tubes, B, Lish group
Chg Cold discharge hot.
Capacity greater Volt good
1288 Volt.

Chg hot discharge Cold
Capacity low
500 ½ 900

Chg & Hot discharge Hot
900 to Volt.

This shows discharge hot OK
but chg hot is very bad
on B, at least

Some B, are poor when chg & discharge
hot. 1200 on a 1350 mah tube

24 hour Chg – Reg Iron against a Nickel strip. But after change to Reversed

1st Reversed

6457	0.0069 ½	2nd chg 33% has quite a deposit of X all others had deposits but no as much
6458	0.0078 "	
6459	0.0135 "	1 gram dissolved in neut to 33%
6460	0.0092 "	6457–8 deposit quite small
6461	0.0200 "	21% only little for 6459
6462	0.0080 "	in spun test in Jena to 33% & results to show little difference with X deposit

2nd Reversed

6457	Very bright Mg gas on using HCl (immersed in H2O, chg)
6458	" "
6459	Bright deposit – deposit gray, shows small bright
6460	Very slight brownish deposit (slightly cleaner in 2 sec in HCl)
6461	Black heavy deposit
6462	" but not so much

as 6461

6457	21K 2 Li
6458	21K 3 Li
6459	21K Saturated Li
6460	21K 1 Li
6461	33% KOH alone
6462	21% KOH alone –

I say that LiOH, tends to + does amalgamate the Hg to Ni strip & thus loosen deposits + helps amalgamate the iron – Iron product, + also removes some scum from Ni strip + causes amalgamation

6461 } shows no sign of
6462 } amalgamation

These two after 1 hour in HCl still shows dull gray deposit, has got KOH with Reg polished pot black from KOH

9 Sep 1st. LiOH Keeps Hg on iron + prevents its migration on reverse – hence iron doesn't go into solution on dissolving permit deposit of oxide inside + on tube perhaps + holds other things back on iron

2nd should call get reversed
very little Iron goes over &
Considerable Hg which wants
to follow the Iron
Any stuff or film of X stuff
Coming on Nickel & Cobalt
up by tendency of LiOH
to clean it & carry amalgamation
Without LiOH considerable
Iron Migrates to cathode
any Hg Coming to the
Reverse of LiOH

I say that I think from
these Expts that Nickel
dissolves in KOH in
presence of LiOH,

I say -
Iron is not affected by charging
hot like the Nickel

Plain Ni in 21% KOH alone
dont give 1/3 of the Capacity
on chg hol (130 Pels)
With 21KOH/2 LiOH it gives
1/2 Capacity
with 21KOH 2 LiOH + Bismuth
3/4 Capacity

Regeneration Bad from Fe, long cells
1 Fe + 4 Ni in small Cow
tried 10 — say Fe does really
go bad (Minutes of gas Evolved)
from Dark Fe wire —
I think also it gets passive
Helium chg & then shorts

The average of the 10 7s when he shooted was

896

8th Run 2289

15 – 2540

16 Run after full chg + shortcked 3 times was 3047 –

Evidently I can be got back to full chg + shortcked several times –

Kate

7s in pockets gives different
Capacities if pockets plated
with different metals plated
with Nickel Brass
A tube with flake Mg was
No good at cold – Strong
be in acts Cold Liquid &
Kills mans – [illegible]
Let Experts on this claim
Brown not plated may
be good

Iron on Silver plated pockets
Bad.

Copper plated about Regular

Gold plated Bad

Cobalt plated slightly better
than Reg

Tin about Reg

Cadmium slightly better
than Reg

Bismuth plated slightly
better than Reg

Antimony plated
considerably better
than Reg

3057 }
3058 } 69 Dr Grolle –

60% Fe
40 Cd
5 Hg –

5 grms

~~Very~~ high efficiency chg
Voltage 165
Watt efficiency 61%
Amp " 80%
1200 to Volt

3063 } 88 Dr Grolle
3064 }

90% Fe

To Antimony

Pockets swelled terribly
& burated strongly

3403 – 95% Fe 5% Antimony Split plate
3406 – 5% HgO

	V	1/2
3475	1330	1985
3476	1365	1950

449 mah to gram

3 grms Fe from ferrous Ammon Sulphate

5% HgO non pyro

3607 } 3.5 grms 5% Hg
3608

80% Fe 20 Copper

447 mah per gram

Non pyrophoric

5 grm Cakes all much lower

Curious Variations

3829 - 80% Fe 20 Aluminum
3830

self heating - 5% Hg

	V	1/2
1420	1850	nearly 400
1420	1710	to mah per

grm Fe

Lots of 80 Fe 20 Sb
went all times of wor
1400 to 100 only

Fe from ferrous Sodium Sulphate, gives highest efficiency yet

1470 long cell
1400 about " 5 grms

3143
3144 } 93.4% ampere efficiency

takes 6 or 8 Runs to bring it up

3445
3446 — 5 HgO — Non pyrophoric

80% Fe 20 Bi

2 1/2 grm pocket

gives 400 to gram of Iron

3459
3460 } 80 Fe 20 Bi Non pyro

400 mah per gram

5 gram pkat gives 334 to mah

3857
3858 Ferrous Ammon Sulfate
Fusion
1/2 1/2
1570 1750
1475 1630
4 grm pkt self heated
Holland says
Watt efay 66.8
The non pyro did not
do as well

Evidently Complex salts
like this fused over highly
porous ferricox
should be exported
with — See Runs —

Fusion
3867
3868 non pyro 5% Hg
1/2
4.5 grms — 1325 1725
1390 1425
Holland Watt
efay 65.8
Cupric
Ferrous
Ammon
Sulphate

3869
3870 4½ grms 1845
1600 1695
1425
Holland 68.5 Watt efay

3885 Ferrous Ammon Sulphide
3886
4 grms
1390 1745 self Heat
1450 1895
Dontsay left Hg —
Holland 68.4 Watt efay

Perfect

4584
4585 } Bi in Iron
4586

goes bad after 100 Runs

	Vrel	150th Run
5% Bi(OH)	590	15
10%	1175	25
15%	2140	15

Awful-

Note 5 gram pkts

4587-88- Iron oxide

No Hg mixed with 10%

Metallic Antimony reduced to fine powder by hydrogen with it put up with 4 Ni tab.

50th Run V
1800
1715
1700

4782-83-84 8.192 av wt

Packets Not Nickel plated

50th	400 Run
2165	1700
2260	2035
2340	1850

Plated Dup

50	400	4779-80-81
2500	2600	8.192 wt
2260	2200	
2500	2500	

Ferthq 5 gram Cake

Req Fe –

	50 Rum	1/m
No Hq	1255 1535	1740 2200
2% Hq	1540 1495	2165 2255
4% Hq	1720 1630	2570 2460
6% Hq	1790 1665	2665 2480
8% Hq	1575 1553	2365 2255
10% Hq	1740 1795	2590 2630
12%	1700 1795	2690 2710
14%	1850 1730	2640 2565
16%	1770 1525	2690 2360

Req Iron thru def screen

	50 Rm	100 Rm
30 on 40	950 1200	
40 on 50	1400 1360	
50 on 60	1400 1345	
60 on 70	1530 1615	
70 on 80	1280 1310	
100 on 180	1860 1900	1640 1560
thru 180 mesh	1770 1640	1480 1530

Reg 72 6% Hg 5 grm Cake

		150 Run	
All fence thru 20 mesh		1570	2320
		1640	2545
"	30 "	1800	
		1800	
"		1895	2730
"	40	1450	2370
"		1570	2500
"	60	1765	2510
"		1775	2620
"	80	1675	2525
"		1890	2750
"	100	1755	2530
"		1465	2095
"	180	1285	1885

Iron run cold is bad no matter how much weight of temp mentioned Reg capacity at 75° allowed very little below 2½ lbs & 4,000 lbs -

Carrugating 72 pockets dont seem to be good Crimped only beats all crinkled -

I remark that there is good mechanical reason Iron goes bad -

Note, given Hg causes [illegible] mentioned in [illegible] abnormal - Hg acts as solvent

Hypophosphite Soda
Apparently don't hurt Grows

See what

3608-9-10

Grows are

90.7
91
87.5
90
} amp Effect

68.1
68.9
66.7
67.8
} watt Effect

Get 72 rum Nos 3143 to 3152

Is the ones with two smooth press
+ 25 altimo Corr up to 125
25 altimo cut altimo

1 = Silver. Nitr with formaldehyde Aq-sol —
2 Nickel The NiOH. by reducing with
Hydrosulphite after getting Good
Conditions use no flake — or use
max amount Hydrosulfite
Comonly possible to want flake —

3 = Second Autoxing Can be reduced
by Hydrosulphite —

4 Small lot for 6 or 8 Silvered Tube
tests Concentrated $CoCl_2$ = Conc hot 150°
Ary + $NiOH)_2$ same temp, soak

5 Also see if $CoCl$ Conc hot will
dissolve $Co(OH)_2$ & how much —

6 = Reg Ni soaks like Y did $CoCl$, but hot
Conc of $NiCl$ $NiOH)_2$ & only fully wet.
Important Expt
Try low & high loading wet —
to see if high Lot will affect
dipping load light —

5 grm Cobalt 4 nickel tube used

Fe 4599-9	10% Cobalt reduced by H		1395
4600-1	15%		590
4602-3	20%		440
4604-5	30% Fe mixed with		165

Show Cobalt does something bad

Fe — 3 lb Tamp fall 4 3/4"

		Cap 75 Falls
80 mesh —	6,285	500
50 "	6,300	450
120 "	5,760	700
180 "	7,300	1100

Shows wants fine Fe for nitrides
Nitrous Ammonium Sulfate

RA Expt 1551 - Fe reduced by H but
nitrs metal, reduced at 800 falls -
H replaced by Nitrogen
gave 1st Cold 5 grm Cat

	✓	1/2
	2065	2815
	2175	3025

ditto reduced 900 deg H displaced by
Nitrogen 2 hours 10% Hg
Fe_2O_3 woolwax 100 mesh
✓ RA 1550 35 gm

2630	3/4		
2600	3990	1780	1650
	3990	1960	1500

[ITEM FOUND IN BOOK]

Chem Soc jnl 1888 p 101 – reducing metallic film – Cobalt passing from surface of a plating sol to air – (Vac semi) gives film which float

Basic Mercuric Salicylate sol in KOH.
without change precipt by CO_2 + acids

Cobalt practically never becomes passive
– Ni is worst Fe next & Co hardly any
Dip iron rod in Conc $CoCl_2$ work rug made in pockets & test ~~20~~ 20" iron.

I say in one of the Ni book
after trying a vast number of solutions
to plate Ni without peeling I thought
trouble was due to Hydrogen & I
put H_2O_2 in sol to combine with the
H + it stops cracking & peeling

[ITEM FOUND IN BOOK]

FEB 24 1910

On Regeneration of PbO and Zn es.

Each cell consists of 1 lead Zn e (from tube cell after 250 hrs), against 4 long tubes, in 7.1 Bo. 1.107 + 11.2 g. SO4 per l.
Zn lead experiment made to find how long Zn es could be brought back regular running, and then how much more short-circuiting would do for them.

CELL	Run #1 IV	Run #1 SV		Run #8 IV	Run #8 SV		Run #15 IV	Run #15 SV		Run #16 IV	Run #16 SV	Run #17 IV	Run #17 SV	Run #18 IV	Run #18 SV
#1630	915		3 runs @ 300 m-a, and 3 @ 750 m-a	2330	3650		2635	3970	7 alternating short-circuited, 3 times	3090	4735	3215	4840	2995	4575
31	725			2170	3355		2560	3820		3250	5005	3375	5045	3090	4995
32	1090			2420	3685		2620	3895		3060	4620	3100	4630	2955	4460
33	1265			2495	4190		2570	3770		3400	4480	3150	4885	3000	4450
34	935			2165	3385		2410	3650		2995	4495	3155	4835	2950	4455
35	1230			2595	3990		2380	3480		2850	4220	2980	4520	2800	4210
36	900			2365	3695		2680	4035		3100	4990	3225	4865	3040	4640
37	700			1995	2960		2475	3650		3045	4635	2920	4275	2815	4195
38	700			1995	3030		2420	3660		2980	4540	2975	4200	2670	4005
39	700			2165	3325		2640	4030		3200	4910	3365	4995	3095	4625
	8916			22269	3516		25549	3798		30951	4458	3151	4499	29916	4431

Results prove that the Zn e does not really go bad but its capacity becomes latent, - thus disuse I believe.

Will make experiments to find effect of charge rate, discharge rate, temperature, etc, on regeneration of lead Zn es.

W. E. H.

That's the only trouble

~~Here's the~~

Notebook, N-10-04-10

This notebook is a continuation of N-10-02-11. It covers the period April-June 1910. All entries are by Edison. The book is the second of three books that contain notes and drawings regarding the development of phonograph recording and reproducing apparatus. Several of the entries note the involvement of Alexander N. Pierman. The first entry indicates that much of this work was conducted at Edison's laboratory at Fort Myers, Florida. Inserted into the book are several pages of notes and drawings relating to the phonograph experiments. The front cover is marked "Phonograph No 2 April, May, 1910." The pages are unnumbered. Approximately 30 pages have been used.

April 10th 1910

2nd book of Florida Experiments on the Phonograph,

The first time I ran over with SR Premier Italy on 1" Ruby Dia Celluloid I could not hear the sign of a scratch. The 4th time over it was plain as Cockerman showing that with SR 1 of that there is a drag of the sale on the wax which causes it to flow in direction of rotation + probably makes little mounds not discernible in the record, can see in Microscope that the surface is slightly roughened.

Evidently when using White wax a very delicate reproducer should be used to test it as Reg will undoubtedly roughen it at start the scratch although it cant be heard —

As the music (not) Piano was good on Mouton there is apparently no reason why should not use considerable harder Needles

Apl 10 1910

I think that the best secondary knife would be a black Diamond. When yd back have one made

It may be that a little castor oil on the knife edges of the Remington Draftin might improve the sensitivity

All the Experts in books I run to now is with old 25 yr old piano, here it has a Curtain hanging over the strings & the felt hammers Comes up & unslad of striking directly on the strings strikes the ~~[illegible]~~ strings thru the Curtain — But the Curtain was raised on all keys lower pitch than middle C, Middle C & 2 keys lower pitch strike Curtain No other key of low pitch

Apl 10 1910

Chlorinated Soluble Lac addition of acetate xi don't condense Lac gets like Can be mixed in very fine powder but a knuckle is as hard as gum phenol paper Formal Compound — press fine —

I think acetates are just the thing for mixing Oxides as the Lac keeps Lac from Condensing Try acetates Zinc, lead, Copper Aluminum, antimony, proto acetate Fe detto Mn,

Apl 10 1910.

1" Reeder

Celluloid nonferous center double

double

1st adjustment. Chatter & rolling. Mellow
made several adjustments 80 thread
screw ½ turn at time. Chatter & co
gradually got less finally after
10 or 12 ½ turns or say 1½ @
2 turns Chatter & rolling disappeared
some chords are abnormally
Loud one chord has a crack
sound but last adjustment
almost disappeared —
There is one chord that is
abnormally apparent in Volume
it has been taken in the 1"
with all changes so it
must be checked in.

On good adjustment for
Pianos — Happily 3 sing
accompanying pianos, with
funnel 2 ft from seg

Apl 10 1910

position away from the Piano &
Women 4 to 5 ft from funnel
Came out loud enough but
there appeared to be interference
in some of the women's notes
it was not good —
They then sang Lady Lu
without funnel 3 ft away
it was not good — There is
Evidently something interfering
something loose possibly
Edge leak — It was
loud enough (16 women
although Could not see rylly
with Naked Eye. In the
SR that makes it loud
yet Piano shows plainly to
Eye but all the sound is
at bottom of groove
probably .0003 variation
We now go back to Piano
gave more pressure still
just as loud & still uneven
Cant not go bad — We
now give it a double dose
of the tightening screw —

Apl 10 1910

This is much better still mellow & not so much crispness, a small crash one chord & one a Gnomal Loud but less than previously Consequently notice any lessening of volume during all these tightenings — Another tightening slightly diminished volume of the more soft but sharper but its not rich or mellow & too unknown to please

Possibly the lever of steel is too heavy & the difference in momentum is trouble we are making a Celluloid lever

If we have a compound body like 2 pivots of which are only in contact the ~~other~~ outer one being the heavy body it would seem that of the two were given a sudden motion the heavy or outer body would tend to separate or at least reduce the

Apl 10 1910

pressure of contact & create another wave. This is probably the cause of the crash

The lever weighs 180 mlg the center celluloid jet out 60 — 1/3 of 180 is 60 & 60 for center makes 120 having full amplitude whereas the dia weighs 80 & has 1/2 amplitude equalling on 40 for momentum —

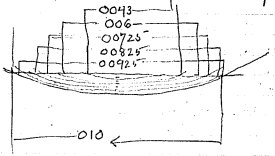
Evidently the lever must be of celluloid & weigh 40 mlg 1/3 of which would have full amplitude or 13. This with center 60 gives 93 - against 40 for diaphm - possibly this will be OK —

P put Rec'd 1/16 in advance of center

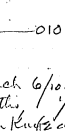
This is much better no crash

2 min Record

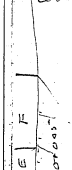
Divided into 6 parts. Apl 10 1910



for each 6/1000 - the track has above width, 1/2 of the total depth. when knurled bottom is



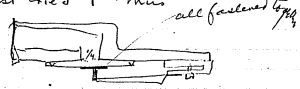
This shows the advantage of tracking deep



Apl 10 1910

One sixth of total depth is got in widening the track only $\frac{1}{1000}$ or 1/10th of the space, 1/3rd of the available depth only uses 2/1000 - 1/2 of the depth only uses .0325 or 1/3rd of the model ~~the~~ space,

Just tried 1" thin



flat celluloid - its awful sensitive

~~Bet~~ Mellow Beet has lots of something in it fingers in bars make it good. its louder 3 ft away from funnel. Hard Rec 10 with Ring dia is close to piano, its mellow when ~~clean~~ & cohesive in it undoubtedly of shaped to (it has the same quantities of volume

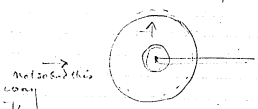
Apl 10 1910

remove clothes it would not be so sensitive but it would be more than 1" Ring Dia, so far Ring Dia preferable

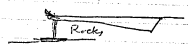
We are now to put in a short 1/4" steel taper in place of the 3/4" —

It will be stiffer but we can then it down at the clamp —

I notice on sketch previous page that the dia slips easily sideways rocks.



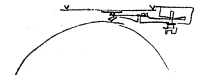
The arm is too far away from the Dia



Apr 10 1910

Think it gets a false movement in it which is recorded

Should be thus

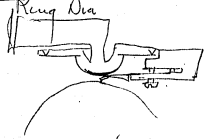


Very short + rigid on it

Dia should be 1/16 longer to leave some Margin —

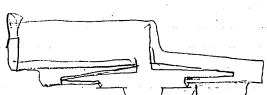
Think I noticed a buckle in Dia when pressed a little in

With Ring Dia



Try double Celluloid 2 dia
" Paper 2 or 3 Kinds —
" Mica 003
" Rubber

I run over the old Piano Record with steps, in made with $1\frac{1}{2}$ or $1\frac{5}{16}$ Ring dia Mean
All Cutter Knife Edges are rubbed They are round & mellow & not uneven like I made Celluloid,
So it the Chamber or the Celluloid

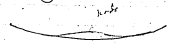


Try 2" Chamber on 1" dia

see if that makes. Uncertain – The wind pressure will rise slower in the large Chamber than the small one –

When a Reader is adjusted mellow & sensitive, the Chords give shaken & rolling where no Edelmann of Jenny Lind T. Even when fundamental growls away & volume diminishes
The only thing I know can attribute it to is that
the work done by the knife I throws a Node in the Cylinder

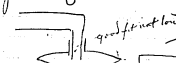
of the dia & it makes 2 Kinds of Vibration



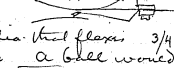
thus node is accentuated by momentum of knife vibration –

April 11. 1910

Forget rid of nodes how is this



No dia that flexes 3/4" dia – 1/8 tube a ball wound 6 oz good

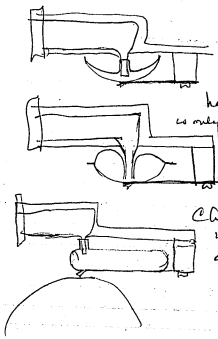


and the weak also

My theory was wrong – Everytime we have tried things like this have failed –

April 11 1910

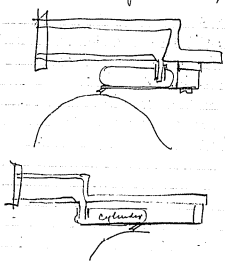
These shellac & cork may be due to the difference between the natural vibration period of the arm & the dashpot. They clash.
If both could be got alike probably trouble would disappear.

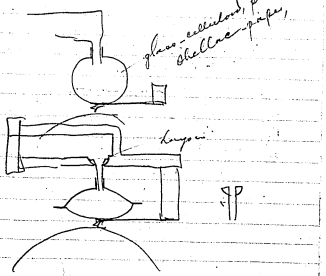


I fear the bug here is that there is only cushioning of the column of air in the 1/8 tube

Hinge of chamber has nothing to do with it

April 11 1910 all NG





Apl 11 1910

It is surprising what a stiff spring to hold Chamber & Reeds must be used to have a vibrating time sufficiently rapid to follow the piccolo or high Soprano, Its because the Chamber acts as a loaded or weight on Extreme end of lever, This slows the natural vibrating time so that a very stiff short spring must be used, have been trying with reed in Vic with a load of Lead equal to wt of Chamber & find of load wt in End of Reed must be 10/1000 thick 3/8 wide — This is too short for practical use probably 3/4 long 3/8 wide & 30 or 40/1000 thick. It will be a great advance if this idea can be made practical, as there is only one flexing point & that quick & controllable, we get rid

April 11 1910

of buckles, nodes, friction, binding of parts, sections in tune with some notes & other Evils — The only new evil in this new device is the sliding sections, & leakage, this I feel sure can be got practical with 1 to 1½/1000 leaking around the 1/8 tube — The other is to balance the chamber on the spring so there is no bending of the bar to get to parallell if out of true, The other is to get quickness & sensitiveness in the Reed —

Another thing occurs to me the weight of the Chamber slows the reed also the depth of tracking does same thing, so this will again indicate a stiffer reed to be quick enough & also to not be in tune with pianos or Sopranos or a time of 6 to 8000 seconds.

Apl 11 1910

Possibly the slowing up of the vibrating time of our Reg recorders by work done on way when chords are struck is cause of Clatter because we know that if we get clatter & why & we stiffen spring it disappears unfortunately the semitones also disappear

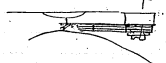
This is best Explanation yet

Explanation of Clatter & Why

this is why Quality is better on 4 mm than 2 mm

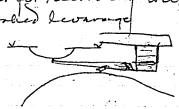
This would call for a record way that had minimum power to cut or friction,

Apl 11 1910



put pieces in between springs so when Chord comes the quicker also maximum —

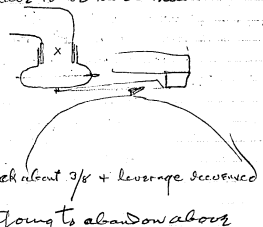
If above explanation is true then a 100/1000 Cutter would be better for recording with demagnetized Dewarage



& maximize the loudness by amplifying Reproducer like SR Even the Reg 40/1000 ball is ok but not so good as 80 or 100 for light tracking

Apl 11 1910

To make the Resonator Idea work it will have to be made this



Sliding weak about 3/8 + leverage screwed 3 to 1

Going to abandon above principle for a while —

Have furnished the Wedge Recorder the analogue of the Standard Reader — it is provided with Indexes + we shall not test out this principle accurately It look favorable to stop Clatter + Whiz as I fear that the heavy Chokes cause a delay of the knife + rebound — but in the wood-lathe

Apl 11 1910

the knife travels like a scoop + not up + down perpendicular the shape will be a little different but the knife will cut it in entirely new + better way —

If for speed up + cut the usual way knife might not keep but friction would increase on account of cutting more wax in the same time therefore the way of cutting is the only way out —

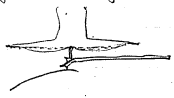
April 12 1910

Tried wedge recorder its weak + has saw whiz in it.

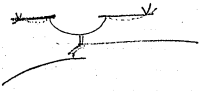
I am at last convinced by Elimination that the trouble (to) clatter whiz etc is due to the action of the work done by the knife on the diaphr producing a

Apl 12 1910

double movement instead of a pure single movement which it would do if no power was absorbed by Cutting the form of the waves, + that this Extra motion is thru in a plain diagram



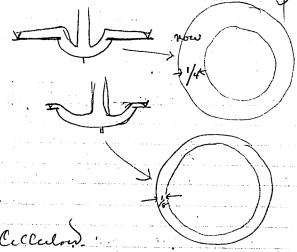
It is made less by new Recorder



The extra of double motion is not very strong as it is eliminated by putting fingers in ears or pressing 98% of the Volume sounds.

April 12 1910

I believe I know can increase the sensitiveness of Recorder to make the overtones come out clear + give mellowness to Piano + at same time suppress the extra waves which comes audable on the heavy Chords expects the co-hade thing



Using Celluloid.

"The narrow ring will bulge within itself in addition to forming with Cavity the Reg large waves but it will require a small proportion of the pressure + is so stiff that it will be inaudible

Apl 12 1910

Possibly the ring now used 1" Dia 1/4" width of ~~Cor~~ One Corrugation put on its middle it might reduce the sub flexion

Another thing that is we do wrong in connecting the non flexing Center rigidly to the Knife Rod, This produces unequal pressure on Ring Dia - must have Ball & Socket or Knife Edge.

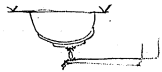
The chamber must be kept small & 1/8 hole to funnel used.

Non flex Center piece must be light - we have just

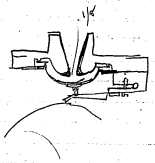
Apl 12 1910

Made one of Celluloid reinforced iron

probably ought to be



The smaller the width of the ring dia & greater its flexing power is the nearer we will get to surpassing the extra wave,



Bass Figure

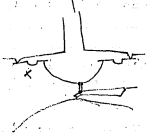
both Ring can be centered

April 16 1910

Tried

Celluloid .005 —

This is entirely too low —



X corrugated & of .0035 aluminum
Entirely too weak, sharp & not mellow —

The best is Celluloid & paper

Paper is more mellow &
I think Cotton used the dried
spongy paper used on wrapping
Kodak films — 1/16 1/16

I shall now try all kinds

April 16 1910

paper, cork, Tissue shell, Tapioca & cake
but think paper will be the best
don't think it will act under
pressure like Celluloid —

Mica & Mary tried & all
recorded perfect. Left away
from Funnel & sound enough

The Corrugation evidently stopped
the Crackle & stopped the
Clatter, Lohz & saw file
sounds, & the Dia now gives
no subvibration due to agitation

Had I kept to Metals, glass &
Mica never would have
discovered this ~~the best~~
Could not Corrugate glass
very well & Mica not at all
& Metals would have been
a ridiculous failure
Yet seeing how celluloid gave
best results in the Dev
Reader I kept experimenting
with it on Recorder, & it

Apl 16 1910

only succeeded when I put that Corrugation in

Using only 1" dia of Cone helped as it gives a very light vibrating platform & reduces chances of Gurgling

I think that if we shorten & lighten Knife lever we will still further improve it.

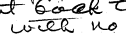
Putting in the Toggle between non flapping Center & Knife lever was another improvement as it prevented the Center Evenly around the Edges of the Ring Dia —

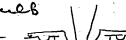
All a happy Combo

I think we are now fixed to make the Grand Cumberal 4½ X 7½ Cylinder & Record a Record Hasenpfeffer of Beethoven Hymn

Possibly a Magnesium arch Center & thin glass would be better than Aluminum as they could be made lighter

I forgot to mention that when we used 1/8 hole leading to funnel & bulb Extension there were a number of Saw filing sounds came in which disappeared when we went back to the Reg hole 1/4" with no Extension or bulb

A  ng -

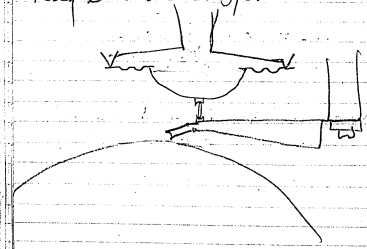
B 

Louder than A - bored X out to 3/8 & this was still louder & clearer —

Apl 16 1910

Think 1/2" with 1" Dia is the right thing - Egglestone making Wkg drawings for one Carrying the 1/2 Clear thru to funnel —

The Double Corrugation ring Dia is Good yet



May 4 1910 —

Now got fixed again to funnel

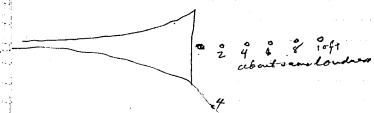
Tried Viscose one corrugation dia good but it soon self deflects =

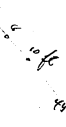
Acetocellulose 1 in 9 film 4 1/2/1000 holds it is good — one corrugation in ring = am making some of different thicknesses =

Big funnel 12 ft 5" Mouth Good for hard —

Tried distance from funnel

OVE





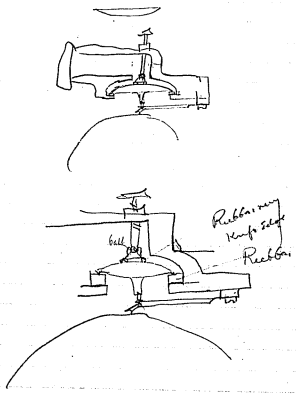
4 ft on 45 $\frac{1}{3}$ the loudness
of 2 ft front — 10 ft is less
than at 45°

Showing LOEak mets
must be in front
fee mmulq & hound ono
on the angle —

Want to get it more
sensitive yet =

Don't think the Geq
formul. is any good
for tracking —

June 25 1910



5%

10
15
20

52 grams

104
156
208

20°
40°
60°
80°

8.00
85
4000
6400
6.800

2,80

446
289
3568
8920
1.288

100
85
500
800

1250 grams

30

210.

8.5
120
170
85
102

32.

225
32
450
675
7200

225
32
675

225
32
450
675
697

446 | 1025 (2.3
892
1338
1338

1025
5
5125

Area in ⅒ of diaphrm

15/16	441	21			10.5
1 "	256	16	58%	of above	8
7/8	196	14	45%	" "	7
3/4	144	12	33%	" "	6
5/8	100	10	23%	" "	5
1/2	64	8	15%	" "	4

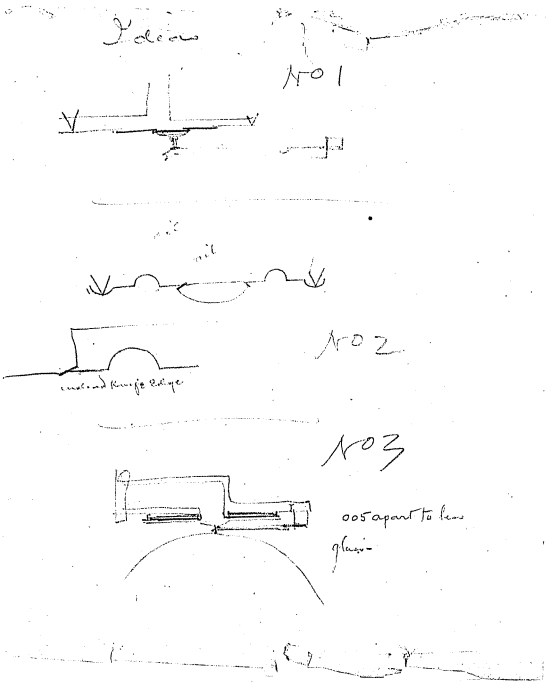
Ease of flexure of outer Edge fastened is square of length.

15/16	max sensitive sqr length		63	1 part in 16
1	1.95 times less sensitive	"	48	1.31 less
7/8	2.55 "	"	42	1.50 less
3/4	3.47 "	"	36	1.75 less
5/8	5.00 "	"	30	2.1 less

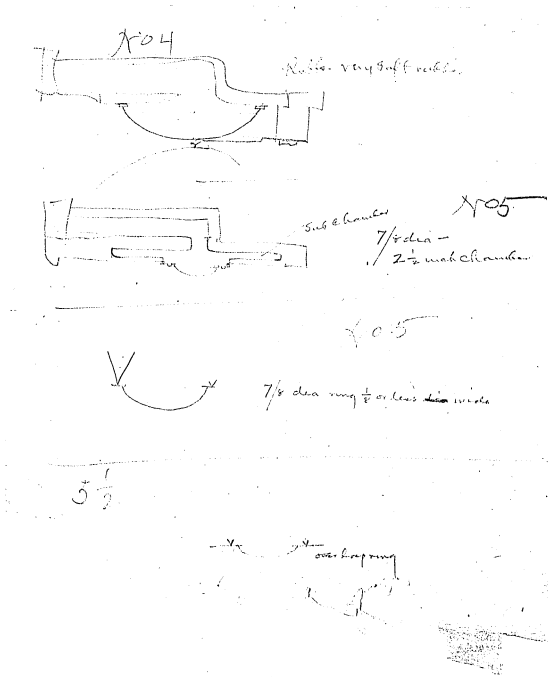
1" on a lever is 1.95 less sensitive but
1.31 more " around Edges
.64 leaving it .64 less sensitive

Weight w/ Cut on Cutter in metal probably 3/4 of weight
a

[ITEM FOUND IN BOOK]



[ITEM FOUR IN BOOK]



[ITEM FOUND IN BOOK]

No 6

To keep falling out.

3 inches gauge at

No arm –

No 7 = Soft screw blank always make muffled & cut
blind screw. make some of fuse & other soft wax
lighting weights & have large & small brackets make
[illegible] Mould
[illegible] Hard
[illegible] read.
always [illegible]

Notebook, N-10-05-23

This notebook covers the period May-June 1910. All entries are by Edison. The book contains notes regarding the use of storage batteries for automobiles, streetcars, and railroads. The notes pertain to technical and commercial matters, such as vehicle weight, freight capacity, battery endurance, and cost calculations. Among the automobile and railway companies noted are the Anderson Carriage Co., the Erie Railroad, and the Long Island Railroad. On the last page is a list of salesmen who worked for various Edison companies, together with some battery sales figures. The front cover is marked "Storage Battery Notes 1910." The pages are unnumbered. Approximately 20 pages have been used.

Notes, Storage Battery - May 23 1960

Anderson Chaus cost 1600 lbs
A4 40 cells 48 Volts 168 amperes
Weight Battery with Trays 568 lbs
Total cost 2168 lbs -
8064 watt hours output
13360 watt hours input
Efficiency 60% - Mileage of
Vehicle without driver at 100
Watts per ton mile 74.4 miles
Watt input efficiency
179.5 watts per mile

17 plate Exide with trays weigh with
Vehicle 2900 lbs. Volts
10752 watts output at
100 watts per ton mile -
gives 74.1 miles input
14300 watts 193 watts per ton
mile

If 2168 lbs is the proper weight with Edison Battery with 2 persons added making a total of 2468 lbs, then it must be wrong and entirely too weak for the lead battery to give the same mileage.

For the reason that the weight with 2 persons gives a total of 3200 lbs. This is 732 lbs overload or equivalent to 6.8 persons on the vehicle, which is absurd

a photo showing 7 persons on a new chassis with one seat illustrate this absurdity

Anderson 1600 Chassis if it is not to be overloaded but the strains on the chassis to remain the same as the Edison with 40 A4 axles to obtain same wear on vehicle & Rubber tires.

it would be necessary
to use a 7 plate Exide
The weights would then be
the same
But the discharge rate of
the 7 plate Cell will be
50 % too high or above
the normal falling as against
the normal Lead rate for
the Edison — of very great on
grades —
There would be 4032 watts
output if discharged at normal
4 hrs. at 100 watts per
low mile gives a mileage
of 37.2 miles as against
74.4 with Edison

Hallamd get watts at 50% higher
discharge rate —

The wear & tear on vehicle &
tires is to be the same then the
above mileage with the
Lead battery cannot

be increased, If the discharge rate is to be kept normal the speed of the Vehicle would have to be reduced around 50 % – There seems to be no way out of the dilemma

If the Anderson Vehicle is designed to stand the strain of a 15 pl atte Exide then the 1600 lbs of Chassis must

Carry 1170 lbs of lead
battery + 2 people in
total wt of 3070 lbs -

It will have 9408 watts
196 amp - at 100 watts per
ton mile it will go
61.2 miles of 70 watts per
ton mile it will go
87.6 miles -

With an Edison battery of
the same weight 43 A-8 cells
336 amp 52 volts giving 17472
watts. Therefore with 2
people + the same weight
total as with lead
The Edison will at 100
watts ton mile go 113.8
miles + on long change
135.5 miles - If it is 70 watts
ton mile it will go 162.6
miles + on long change
193.7 miles.
Or we could add 70 lbs
for an Extra seat on

Chassis, put in 4
persons & Substitute
40 A6 Cells, get same
weight, strength, & size wear
& obtain 12096 watts
which at 100 watts for
mile gives 78.8 miles on
short & 89.1 on long
Charge & at 70 watts
for mile - 127.3 miles -

Public Service
Telephone Mr Young
P S Young Comptroller
Room 912 Prudential
Bldg Newark

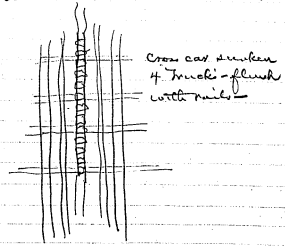
Highspeed level track
acceleration torque
120 lbs per ton
Braking 120 lb Ton
Duration of stops
15 Seconds
See Armstrong paper
XXII Elec Engrs page
92 — Curves

A recent subdivision for
500 KWH. Cost with land
$22,000 or $44 per KWH.
Interest & Depr. $2860 yr
Wages 3 men $8—
Labor cost $2820 $780 for
repairs - $400 supplies
Power factor only 30%
Whereas in SB Loco
80% or better —

No lightning protection
for SB Loco —

Electrifying figure
5% on investment —

At intermediate points
Colliers for training made
up & Cars cut out — to
save switching time &
expense — of Crews
Motor drivers decisions
to Cut out Cars from a
fresh train



Erie 5th Year train & loco run
night on board going usually
Cross river collie going rapidly
up + with spurs from 9th
ave Cleveland run train to
destination

Worst weather ice ele
1/14th of weight 1/5 in summer
Dry rails — 1/4th average.

Erie has 1333 locos
60 new ones each year
5% worn out

Double track RR Trolly
$10300, mile single track
$4800, Estimated
Up keep $200. mile per year

Old Elevated RR Repair
39 cents Car mile
new Electric 28 cents Car mile

Average run of RR loco
80 miles

Coal Cost 11% of Operating
Expense of a steam RR

Average passenger train
electrified 5.5 Cars

Electric average 60 tons
38 tons on drivers.

Wt passenger Cars
30 tons - average 27 tons

Including energy for heating
Cars Lighting 33 watts per
ton mile - at 30 miles per
hour at 40 miles 28 watt
hour per mile - all above

that at bus bar 17 watts,
at trolley 30 miles hour
20 watts hour ton mile — at 48
others say 66 watts —

20 mile run.
300 tons — acceleration
0.5 miles per hour per second
rate of braking 1.25
Coasting 40 seconds
Time stops 30 sec
including light, heating
3 months —

20 miles hour		100 KWH.
30	"	150 "
40	"	200
50	"	250

A maximum voltage drop of 10% on a trolley (track alone single phase system) will allow corresponding to a 25% @ 30% drop in whole line —

Efficiency on Indiana
Union traction Co -
56% from bus bar to motor on
car motor & gear loss
27% 42% net to track

acceleration very little
importance in suburban
railways where stops
infrequent averaging
1 in ½ miles —
above data Stillwell
paper Part I XXVI Elec Engr
jnnl Society —

Long Island steam train
average time of stops
0.49 average speed between
stations 26 miles hour
3 del trains ran 23 miles —
schedule time 56 minutes
~~approx~~ average spec
39.9 miles hr past 52 miles

grade level, Long Island City to Valley stream via far Rockaway

acceleration steam trains page 716 Vol XXIII Elect Engr Faculty above for 5 car train total cost 276 Tons

13 lbs per ton train for clim at 40 @ 45 miles hour

L Island RR limit their acceleration to 1 mile per hour per second

Present Trolley door equalizer—limited to 2 gaits full series & full multiple on these 2 points Cars must meet all conditions Motors must be geared for maximum speed which make them very inefficient

for slow speeds or
Wherever many stops
made — all kinds
devices tried all fail-
if geared 20 miles hour
then on acceleration at
certain rate takes 25%
more power than if geared
to 16 miles per hour
Motors may be easily
overloaded & burned
out -
Instead 2 motors of
4 used & can be reduced
somewhat (many of motor series) but complicates
seldom used —

Violent fluctuations
at Bossitt necessitate
storage Batteries

Many use 4 motors to get increased traction if they were geared loose could put current on gradual —

Think soft or Manganese steel wheels give best traction ~~Entel~~,

Trouble is slip on acceleration

No Electrolysis — no interference with Telephone —

of 100. Kilowatt hour Capacity
for complete power
@ Italian Cost

10% depen on where is it
night —

Think Regeneration for
braking is ok if coming
warranty Extra Complication

Old charge Elevated
before Electric pick on
(multiple Internal Sponsor)
was 46 28 Ton Locos
or 180 43 ft 15 Ton Cars

Funny How high speed autos
make such poor mileages over
~~them~~ a route + lowing cars
compared to Electric
Same thing on PLR I guess

Salesmen

	May 28		June	
	Spik	Reg	S	Reg
Chandler	10	0	5	0
Dawson	0	0	0	0
Doty	0	0	5	0
Fraser	0	0	438	65
Haugh	0	0	0	0
Kelly	0	10	10	0
Phillips	0	0	10	0
Sackett	10	0	10	0
Skelton	10	0	0	0
Slaughton	0	0	0	0
Gifl	0	0	0	0

Notebook, N-10-10-31

This notebook covers the period September 1910-November 1912. It contains a log by Edison and several unidentified experimenters of endurance tests on storage battery cells. The book appears to be part of a test series, but the other books have not been identified. One page has been removed from the book, although the sequentially numbered test entries are not interrupted. Inserted into the book is a one-page cell test report by George H. Hooper, Jr., dated July 1906. The front cover is labeled "Very Important," and "Iron 4508 to 1 to." The pages are unnumbered. Approximately 170 pages have been used.

William H. Hoey
STATIONER,
Good Work Promptly
68 Williams Street, N. Y.

Special # see between
#4992 + 3 inclusive and
after 4994

4510 — | 200 Run | 1825 | 1/2 | 2365 |

4508 Edison 99.—

Made last page

Pr29 5 gm new process
iron some up used test $CaCO_3$ —
Soaked 30 minutes XCP. ~~was~~
$BiCl_3$ acetone — washed acetone
XCP — dried hour heat 12 hours —
KOH & washed — 4 tubes —
21% KOH.

4509 —

Made last page

Reg 5 gm 7a
Soaked Ferrous Sulphate,
~~Bill~~ washed water — not dried
put in KOH, heated washed —
Made 4 tubes —
21% KOH.

4510 #1 Fe 5 gms. deep fractures
Soaked 10 min Bill's Acetone gms.
dried, then boil KOH + repressed.
21% KOH + 2 gm LiOH
against 2 regular mix tubes #49+50
which have been treated in Bill's
Acetone

4511	200	1/2
	1715	2250
4512	1800	2380
4513	1715	2490
4514	1830	2450

4511 #2 Fe 5, gms. deep pockets
Soaked 10 minutes Mercuric Chloride dissolved in Acetone saturated, dried then boiled in KOH, dried and repressed
21% KOH + 2 gm LiOH
Against 2 tubes which have been treated in $BiCl_3$ Acetone Tubes # 51 + 52

4512 #3 Fe 5, gms, deep pockets
Soaked in equal parts $BiCl_3$ + $HgCl_2$ Acetone dried, and then put in Ammonia + repressed
Against 2 tubes which have been treated in $BiCl_3$ Acetone. Tubes # 53 + 54
21% KOH + 2 gm LiOH

4513 #4 Fe 5 gms. deep pockets
Dipped 10 minutes $HgCl_2$ in Acetone, then Ammonia then wash for KOH + repressed
Against two tubes which have been soaked in $BiCl_3$ Acetone Tubes # 55-56
21% KOH + 2 gm LiOH

4514 #5 Fe. 5, gms, deep pockets
Soaked 10 minutes in $HgCl_2$ in Acetone, dried then put in Ammonia 1 hour washed out. Against 2 $BiCl_2$ Acetone soaked tubes # 57-58 Fe have been repressed
21% KOH + 2 gm LiOH

	200 Run	1/2
4515	1695	2120
4516	1575	2315
4517	1775	2365

4515 #8 Fe 5.gms. deep pocket
Same as #9 Except soaked Trisodium Ortho Phosphate. Put up with two BiCl3 Acetone treated Tubes # 59+60
21% KOH + 2 gm LiOH
Fe Pocket has been repressed.

4516 #7 Fe 5.gms. deep pocket
Soaked equal parts Acetone with HgCl2 + BiCl3 dried then KOH dried and repressed.
Against 2 tubes which have been treated in BiCl3 Acetone. Tubes # 61 + 62
21% KOH + 2 gm LiOH. Fe was repressed

4517 #9 Fe 5.gms. deep cup
Soaked Potassium Fluoride not dried, then in Co(NO3)2 dried not dry in 2% KOH, dried then in HgCl2 in half concentrated, then without drying put in KOH, washed out.
Put up with 2 tubes that were treated in BiCl3 Acetone Tubes # 63+64
21% KOH + 2 gm LiOH. Fe was repressed

	200	1/2
4518	1770	2250
4519	1545	2365
4520	1395	2175
4521	1610	2380

4518 #10 Fe 5. gms. deposit
Same as #9 Except soaked K Flouride and, then soaked in $BaCl_2$
Put with tubes that were treated in $BiCl_3$ Acetone. Tubes #65 + 66
21% KOH + 2 gm LiOH. Fe was repressed.

4519 #25 Reg. iron 5. gms with HgO
Dipped Sulphate Potash dried, then in $BaCl_2$. Soaked out. Put up with 2 Bi treated tubes #67 + 68
21% KOH + 2 gm LiOH

4520 #26 Reg iron 5. gms with HgO
Dipped in Sulphate Potash, dried, then in $BaCl_2$. Washed out, put up with 2 Bi treated tubes #69 + 70.
21% KOH + 2 gm LiOH

4521 #27 Reg iron 5. gms. with HgO
Dipped in Sulphate Potash dried, then in Strontia Chloride washed out, put up with 2 Bi treated tubes #73 + 74
21% KOH + 2 gm LiOH

	200	1/2
4522	1690	2375
4523	1715	2450
4524	1695	2360
4525	1535	2310

4522 #20 Reg iron 5.0gms with HgO
dipped in Potassium flouride dried then
dipped in Ba Cl2 washed and dried
Put up with 2 Bi treated tubes #75+76
21% KOH + 2 gm LiOH

4523 #21 Reg iron 5.0gms with HgO
dipped in K Flouride, dried then dipped
in Strontium Chloride, washed and dried
Put up with 2 Bi treated tubes #77+78
21% KOH + 2 gm LiOH

4524 #22 Reg iron 5.0gms with HgO
dipped in K Flouride then dried, then
dipped in Cadmium Chloride, washed
put dried. Put with 2 Bi treated tubes #79+80
21% KOH + 2 gm LiOH

4525 #23 Reg iron 5.0gms with HgO
dipped in K Flouride + dried then in
Calcium Chloride, washed dried.
Put with 2 Bi treated tubes # 81+82
21% KOH + 2 gm LiOH

	200	1/2
4526	1365	2085
4527	1275	1980
4528	1675	2225
4529	1550	2360

4526 #24 Reg iron 5 gms with HgO.
Dipped in K Flouride dried then in Magnesium Chloride, Washed out dried Put up with 2 Bi treated tubes #83+84.
21% KOH + 2 gm LiOH

4527 #28 Reg. 5 gms iron with HgO
Dipped Hexametaphosphate Soda - dried, then in Calcium Chloride. Wash Put up with 2 Bi treated tubes #85+86
21% KOH + 2 gm LiOH

4528 #29 Reg 5 gms iron with HgO
Dipped in Hexametaphosphate Soda, dried then in Barium Chloride. Washed. Put up with 2 Bi treated tubes #87+88
21% KOH + 2 gm LiOH

4529 #30 Reg iron 5 gms with HgO
Dipped in Hexametaphosphate Soda, dried then in Strontium Chloride. Washed out Put up with 2 Bi treated tubes #89+90
21% KOH + 2 gm LiOH

4530 #31 Reg iron 5 gm with HgO
Dipped Hexametaphosphate Soda,
dried then in Magnesium Chloride.
Washed out.
Put up with 2 Bi treated tubes #91+92
21% KOH + 2 gm LiOH

4531 #32 Reg iron 5 gms with HgO
Dipped in Hexametaphosphate Soda, dried
then in Cadmium Chloride Washed.
Put up with 2 Bi treated tubes #93+94
21% KOH + 2 gm LiOH

4532 #44 Reg. 5 gm Fe with HgO.
Dipped in Ferrous Sulphate ½ hour dried,
then when hot redipped 1 second in
Ferrous Sulphate, put in 2% + brought early
to boil for several hours on hot plate.
Washed out twice dried.
Put up with 2 Bi treated tubes # 97+98
21% KOH + 2 gm LiOH

4533 #45
Duplicate of # # 44
21% KOH + 2 gm LiOH
Put up with 2 Bi treated tubes # 99 + 100

4534 #33 Reg. 5 gms Fe with HgO
Dipped in Trisodium ortho phosphate
dried, then dipped in $BaCl_2$, then washed
and dried.
Put up with 2 Bi treated tubes # 101 + 102
21% KOH + 2 gm LiOH

4535 #34 Reg. 5 gms Fe with HgO
Dipped in Trisodium orthophosphate dried,
then dipped in Strontium Chloride, washed
dried.
Put up with two Bi treated tubes # 103 + 104
21% KOH + 2 gm LiOH

4536 #35 Reg. 5 gms Fe with HgO
Dipped in Trisodium orthophosphate
dried, then in Calcium Chloride washed out
dried.
Put up with 2 Bi treated tubes # 105 + 106
21% KOH + 2 gm LiOH

4537 #36 Reg. 5 gms Fe with HgO
Dipped in Trisodium orthophosphate
dried, then in Magnesium Chloride, washed,
dried, put up with 2 Bi treated tubes # 107 + 108
21% KOH + 2 gm LiOH

4538 #37 Reg 5 gms Fe with HgO
Dipped in Trisodium Orthophosphate
Dried then in Cadmium Chloride, washed & dried
Put up with 2 Bi treated tubes # 109 + 110
21% KOH + 2 gm LiOH

4539 Old irons from cell # 8111
Dipped in FeSO4, dried, then boiled
21% KOH washed out and dried
21% KOH + 2 gm LiOH
Bi treated tubes # 111 + 112
4540 Dups of # 4539.
21% KOH + 2 gm LiOH
Bi treated tubes # 113 + 114

4541 #40 Fe 5 gms Reg with HgO
Dipped in Ferric Chloride Anhydrous in
Acetone 15 minutes, then dried and put in
21% KOH + Boiled and washed out + dried
Attacks the grid slightly
Put up with Bi treated tubes # 115 + 116
21% KOH + 2 gm LiOH
4542 Duplicate of # 4541 #41
Put up with Bi treated tubes # 117 + 118
21% KOH + 2 gm LiOH

4543 Drawn from Bll #8358 which have been scalped out, dried. Reduced in hydrogen, allowed to cool in hydrogen and water run in after cold, then dried and pressed. They were very much swelled.
Put up with 2 tubes #1334-1334

21% KOH Run Cold

4544 Slug of #4543
21% KOH Run Cold
Put up with 2 tubes #1354-1356

8358 from

4545 #42 5 grm Fe Reg with H_2S
Dipped in Ferric Chloride in Acetone, dried boiled KOH, washed and dried on filter paper night in contact with hot plate for 1½ hours Put with Bi treated tubes #9.54%
21% KOH + 2 grm LiOH

4546 #43 Slug of #4545 Except
Put up with 6 Long tubes
21% KOH + 2 grm LiOH

4547 Brought from cell #10177

Put up with 2 tubes # 137 + 138

21% KOH

4548 Dupl. of #4547

Put up with 2 tubes # 139 + 140

21% KOH + 2 gm LiOH

4549 New Process Fe_2O_3

baked and ground 3 times then baked at 15 atm and put in regrumps reg pressure. 6.5 gm Rabbit.

21% KOH + 2 gm LiOH

Put with 2 reg tubes # 141 + 142

4550 Fe_2O_3 6.5 baked at 150 atm

21% KOH + 2 gm LiOH

Put up with 2 Reg tubes # 143 + 144

4551 Soaked in Antimony Trichloride in Acetone
Put up with 6 long tubes.
21% KOH + 2 gm LiOH

4552 Samps. of #4551.

21% KOH + 2 gm LiOH

4553 } Fe Mix 2% HgO
4554 } 21% KOH + 2 gm LiOH 5.7 gm

4555 } Fe Mix 3% HgO " "
4556 } 21% KOH + 2 gm LiOH

4557 } Fe Mix 4% HgO " "
58 } 21% KOH + 2 gm LiOH

4559 } Fe Mix 5% HgO " "
60 } 21% KOH + 2 gm LiOH

4561 } Fe Mix 6% HgO " "
62 } 21% KOH + 2 gm LiOH

4573	350	½	M	500	½	H
	1V					
	1925	2100	1530	1785	2175	1330
	2200	2420	1515	1700	2160	1270

4573	550	½	600	⅓	700	½	1
	2100	2850	2070	2525	1200	1940	1600 2456
	1640	2490	2030	2458	990	1245	1245 1720

5578	400	½	400
	1V		
	1900	3020	
	1900	2945	

4513 to 4577 various weights and Temps — Run about the same after 600 Run

150 Run —	1V	½	Not	800	½	H
	2950	4175	1345	1990	1420	1635
	2950	4165	1290	1940	1605	1350
200	1945	4225	1345	850		
	2945	4130	1405	1200	1640	
				1160	1580	
250	2700	4090	1550	900		
	2775	4175	1471	1400	1710	
300 —	2925	3390	1555	900	1575	
	2650	3625	1465			

4563 } Fe Mix 7 % HgO 5. gm
64 } 21% KOH + 2 gm LiOH

4565 } Fe Mix 8 % HgO "
66 } 21% KOH + 2 gm LiOH

4567 } Fe Mix 9 % HgO "
68 } 21% KOH + 2 gm LiOH

4569 } Fe Mix 10 % HgO "
70 } 21% KOH + 2 gm LiOH

4571 Regular Fe # 972 5. gm
Six short tubes 16.8% 12i speed
used Lot 159 — 12i flake 4.2 Inbecon 23.9
#1 Machine
21% KOH + 2 gm LiOH

4572. Dup. of above #1571
21% KOH + 2 gm LiOH

4573. RQ # 1184 Fe — against yellow tube
Machine loaded 19 dumps
6 lb 13 oz weight at 10.114
" 10,080 — 19 dumps. About 531 Milligrams per dump

4574
21% KOH + 2 gm LiOH

4575

200 Run —	2500	3530	1435	850	1/2	
	2300	3450	1404	1385	2155	
	2700	3545	1450	1325	2090	
				1180	2165	
250	4575 2700	3750	1365	900		
	4576 2530	3440	1255	1130	1790	
	4577 2300	3220	1205	1100	1835	
				1200	1900	
300	4575 2600	3800	1467			
	4576 2150	3370	1371			
	4577 2150	3320	1471			
500 —	4575 1775 2000					
	6 920 1450					
	7 1195 1970					
250	2700	3750	1365	76 2025	1/2	
	2530	3440	1255	77 2020	2090	
	2300	3220	1205		2650	
					2510	
350	4575 1800	2945	1610	770		
	1500	2520	1490	860	1425	
	1600	2390	1460	1270	1235	
					2000	
250						
4575 = 300				450		
	2255	3300	1600	1500	1/2	
	1825	2490	1565	1675	2915	
	1900	2870	1650	1700	2460	
					2475	
4575						
500	1/2	1/2	600	1/2	600	
1900	2525	1375	1350	2225	1260	1763
1360	2155	1260	1450	2310	1110	1955
1900	2515	1310	1580	2360	1490	2075

850	1/2	4575	1/2
1385	2155	1195	
1325	2090	1195	
1180	2165	1970	
900		4575	1/2
1130	1790	1600	2000
1100	1835	1320	1790
1200	1900	4575	1645
650	1/2		
4575	1690		
76	2025		2090
77	2020		2650
			2510
770			
860	1425		
1270	1235		
	2000		
450			
1500	1/2		
1675	2915		
1700	2460		
	2475		

4575 Rd. #1184 Fe mix
Loaded in machine Room #2
5 lb weight
30 dumps per wt. 9.932
21% KOH + 2 gm LiOH Run Regular
About .331 milgms per dump.

4576 Like of 4575 Except
3½ lb weight
27 dumps per wt 9.448
21% KOH + 2 gm LiOH Run Regular
About 350 milgms per dump.

4577 Like of 4575 Except
2 lb weight
35 dumps per wt 9.943
21% KOH + 2 gm LiOH Run Regular.
About 357 milgms. per dump.

4578-79. Rd. #1196 Fe mix.
Two 5 gms pockets.
Charge + discharge twice, then charge full + remove from cell recrystalize quickly to 300 ttha + put back. Run Regular with 4 tubes.
21% KOH + 2 gm LiOH

4580-81. Dup of 4578 Except
Charged & discharge twice, then charged and taken out, and allowed to self heat till cold - then wash out KOH dry & repress at 200 atms.
21% KOH + 2 gm LiOH

4582-83. Rd. # 1196 Fe Mix.
1½ lb tamp and 6 Milligms of #1123 Ni flakes after each dump of iron. Assemble with # nickel tubes.
21% KOH + 2 gm LiOH Run Regular.
for endurance.
7,500 gms of Fe + 600 Ni flakes Lot 1123.

4584. Rd. Fe without Mercury, added to it 5% Bi Hydroxide
5 gm cake regular pressure.
Put up with # tubes.
21% KOH + 2 gm LiOH Run Regular

4585 Dup of 4584 Except used 10% Bi Hydroxide
21% [illegible] Run Regular

4586 Dup of 4584 Except use 15% Bi Hydroxide
21% KOH + 2 gm LiOH Run Regular

		IV	½	H
50 Run	4554	590	825	1315
	4555	1175	1400	1295
	4556	2130	3075	1275
100	4584	45	165	1510
	4585	65	205	1260
	4586	85	290	1260
150		15	45	1500
		25	110	1530
		15	160	1540

Note, Bi makes contact

50

1800	2600	1385
1710	2500	940
1700	2400	1430

1710 Run 1/4

1385	1747
1205	1830
1360	1920

960	820	1620
645	925	1320

4587 Iron Oxide no HgO
mixed 10% metallic Antimony, reduced to fine powder by hydrogen with it.
Put up with 4 tubes
2 pockets 5 gms each.
21% KOH + 2 gm LiOH Run Regular
4588.

4589 R.A. #1196 Fe Mix
5 gms each in pockets that have not been nickel plated.
Put up with 4 tubes each.
Run Regular
wt 5.000
4590 " 5.000
4591 " 5.000

4592 R.A. #1196 Fe Mix – mixed with 15% Bi hydroxide. Put up with 4 tubes
21% KOH + 2 gm LiOH Run Regular
wt 5.000
4593 " 5.000

4594 RA #1196 Fe Mix mixed with 25% Bi hydroxide. Put up with 4 tubes
21% KOH + 2 gm LiOH Run Regular
wt 5.000
4595 " 5.000

50 R 1/2
1270 1700
1396- 1880

500 600
496 475

440 567
255 340

60 115
165 220

4596 Fe no HgO mixed with 25% Bi hydroxide. Put up with 4 tubes
21% KOH + 2 gm LiOH Run Regular
wt 5.000
4597. " 5.000

4598 Rd. # 1196 Fe mix. mixed with 10% Cobalt powder reduced by hydrogen. Put up with 4 tubes.
21% KOH + 2 gm LiOH Run Regular
wt 5.000
4599. " 5.000

4600 Sample of 459 8 Except use 15% Co.
21% KOH + 2 gm LiOH Run Regular
wt 5.000
4601 " 5.000

4602 Sample of 4598 Except use 20% Co.
21% KOH + 2 gm LiOH Run Regular
wt 5.000
4603A wt 5.000

4604. Sample of 4598 Except use 30% Co.
21% KOH + 2 gm LiOH Run Regular
wt 5.000
4605. wt 5.000

4606-7

1100	1025
1355	1225
110	100
1270	1220
137	125
225	225
340	335
470	500
470	500
555	575

4608-9

250	10
330	25
50	0
75	25
50	0
75	37
115	15
135	30
125	25
150	50

4610-11

1025	1240
1325	1610
162	487
237	737
237	537
450	822
590	1085
765	1400
785	1100
1000	1430

4612-13

1250	1250
1570	1635
325	587
487	887
437	650
650	1042
995	1260
1225	1698
1065	1290
1300	1730

4606. R.G. # 1196 Fe Wire
Put up in pockets that have been Silver plated. Put up with 4 tubes
21% KOH + 2 gm LiOH Run Regular
wt 5000
4607 " 5,000

4608 Dup of 4606 Except use the iron that has no Hgl in it.
21% KOH + 2 gm LiOH Run Regular
wt 5.000
4609. 5,000

4610. RG # 1196 Fe 2 mix mixed with 5% very finely powdered Red Oxide of iron
21% KOH + 2 gm LiOH Run Regular
Put up with 4 tubes.
wt 5000
4611 " 5000

4612 Dup of 4610 Except use 10% Red Oxide iron.
21% KOH + 2 gm LiOH Run Regular
wt 5.000
4613 " 5.000

4614-15

1100	1260
1520	1790
175	570
325	850
475	725
825	1125
1245	1885
1620	1885
1975	1400
1800	1850

4750

4616-17

1100	1100
1310	1360
112	125
200	212
262	262
425	425
500	500
990	985
810	810
1010	1000

4614 Sample of 4610 Except used 20% Red iron oxide.
21% KOH 3 gm LiOH Run Regular
wt 5.000
4615. " 5.000

4616. Sample of 4610 Except used 33% Red iron oxide.
[illegible] Run Regular
wt 5.000
4617. " 5.000

4618 Fe with no HgO mixed with 25% Red iron oxide.
[illegible] Run Regular
Put up with ⚲ stopper.
wt 5.000
4619. " 5.000

4620. Rd. 1196 Fe Mix mixed with 10% ferric oxide, from igniting the nitrate of ferrum
21% [illegible] Run Regular
wt 5.000

4621 Sample of 4620 Except use 15% ferric oxide. wt 5.000
[illegible] Run Regular

4622 Mixture of 4620 Except wet
25% ferric oxide.
21% KOH + 2 gm LiOH Run Regular
wt 5.000

4623 Ferric Hydroxide
ignited at full yellow heat (1100°C) AMG
ground up very fine swelled
wt 5.000
21% KOH + 2 gm LiOH Run Regular

4624 Ferric hydroxide Don't give anything
ignited at 1250°C
21% [illegible] Run Regular
wt 5.000
ground very fine not ignited enough I guess

4625 Regular Red Iron from igniting
Sulphate at high heat ground fine
pressed at 300 Atms.
21% KOH + 2 gm LiOH Run Regular
No Current
wt 5.000
4626 wt 5.000

4627 Mixture of 4625 Except wet
till it felt damp, CO
21% [illegible] Run Regular
pressed at 300 Atms. No current wt 5.000
4628 wt 5.000

	1580	2330	
66	1590	2350	
	IV	½	Hot
50	640	800	1740
	660	790	1750

No Current

N4

N9 No Current

Neo-	130	340	
	130	340 -	
50	175	425	1479
	185	450	16.7

4629 Fe Regular Fe mix #1349.
Put up with 4 tubes that have 15%
Bi_2O_3 mixed with #1256 $Mn(OH)_2$
The Bi thru 100 on 90 mesh.
wt 5. gm pellets
4630 Fe wt 5. "
21% KOH + 2 gm LiOH Run Regular

4631 Fe Brown Oxide Fe_2O_3
Made by igniting Fe Nitrate
21% KOH + 2 gm LiOH Run Regular
wt 4.085
4632 wt 4.085
Regular pressure

4633 Fe Magnetic Fe-oxide Fe_3O_4
Obtained by wet reduction of Ferric hydroxide
dried at 150 & lorrigated at 350 atmos.
Set up with 4 Bi tubes against each Fe.
21% KOH + 2 gm LiOH Run Regular
wt 5.000
4634 Fe " 5.000

4635 Fe #1349 Brown mix mixed with
20% Bismuth Oxide thru 180 mesh
2 – 5 gm. pellets.
21% KOH + 2 gm LiOH Run Regular
4636 Fe

Hot 4640-1 ½

905	1110	1370	500	562
935	900	1035	500	525
	878	1010	910	1045

50

870 885

1010 1020

Co

4637Fe Put up 2 tubes with
Goldsteins # 40 f Ni Oxf/2 Lot 41 Ni flake
dump 27 grams, then ¼ flake + tamp
Run as iron
21% KOH + 2 gm LiOH Run Regular
and 5 gm Pocket

4638Fe #1349 Iron Wire
Pressed 2 iron cakes at 300 tons
and put in pocket loose
not crimped or corrugated
Put up with ¼ tubes wt 5.000
each. wt 5.000
21% KOH + 2 gm LiOH Run Regular
4639Fe

4640Fe Cadmium Hydroxide Sept 7, 10
~~Lot~~ 41 Ni flake = 40 Cd = 27.0 #1 Mach.
21% KOH + 2 gm LiOH Run Regular
dump 27 Cd, then ¼ flake + tamped
Pressed into discs, then through 30 on 190 mesh.
Tubes to be run as Fe
2½ dumps wt 8.991

4641Fe .290 " wt 8.991
very heavy.

50	1/2	
420	430	Co
425	435	

50 Run		1/2			
855		930			
1160		1285			
	400	1/2	458	1/2	
4646	2200	3425	1790	3040	
7	2200	3425	1740	2975	
8	2440	3790	2000	3325	

new -
2830 2990
2930 4115
2675 3735

Cold test.

		75 Tubes		42 Tubes	
		2830	3990	2310	3520
		2930	4115	2500	3635
		2675	3755	2300	3395
50	100	150	200	250	300
3980	3100			2900	2850
3835	3150	2710	2925	2800	2760
3010	2900	2835	2770	2580	2760
		2820	2720		
500	1	550	600		
3010	3350	1880	2000		
3895	3260	1985	2000	1640	2000
3630	3275	1985	2000	1800	2920
			2000	1820	3315

4642Fe Cadmium Oxide Sept. 7, 10.
Lot 41 in flake = 4.0 Cd = 26.9 # mesh.
21% KOH + 2 gm LiOH Run Regular
Pressed into discs at 300 atms, then thrown, 300 on 1 gauze
dump 29 Cd, then 4 flake + tamp
Tubes to be run as Fe
313 dumps wt 10.514
4643Fe 339 " wt 10,433
very heavy

4644Fe Cadmium CO3 reduced by CO gas. Sept. 7, 10.
Lot 41 in flake = 4.0 Cd = .029 # mesh.
21% KOH + 2 gm LiOH Run Regular
Pressed into discs at 300 atms, then thrown, 300 on 1 gauze mesh.
Tubes to be run as Fe
dump 29 Cd, then 4 flake + ~~tamp~~
481 dumps wt 15.770
4645Fe 485 " wt 16,110.
Had to feed .029 per dump as slide sticks almost closed

4646Fe 3 pockets #1349 In Mina Oct 31, 10.
7 lb wt, to be made with about
30 dumps per pocket.
24 dumps wt 10.414
4647Fe 26 " " 10.40
4648Fe 26 " " 10.588
Average per dump about 418 milligms.
21% KOH + 2 gm LiOH

Recs 1/2
2450 3700
2360 3400
2475 3530

50 100 150 200
2790 3100 2650 2800
2760 2760 2175 2700
2865 2763 2473 2575
500 1990 3100 500 2600
1900 3160 2350 2275
2100 2050 2450 2583

Cold test 75 Fahr 1/2 42 Fahr

4649 400 1/2 2450 3700 1890 2775
50 2600 3985 1950 2850
54 2175 3375 2380 3400 1675 2450
4649 400 2475 3532
56 1780 3075 500 1900 3385 1195 1700 3130
57 1700 3153 1820 1170 1800 3200
1885 3030 1925 3060 1200 1735 3010

Recs

50 100 150 200 250
2540 3600 3060 3120 2915 2960 2900
2500 3550 2960 2850 2700 2700 2800
2380 3400 2900 2860 2635 2500 2820
500 2500 3100 2500 3500

Cold test 75 Fahr 42 Fahr

4652 1/2 2540 3400 2400 3570 2400 3520
53 2600 4100 2500 3550 2375 1995 2575
54 2400 3775 2360 3400 2360 3261 2185 3165
4652 400 2375
55 2360 3675 500 2465 3880 3500
2065 3350 2100 3475 1840 3225
2100 3350 2150 3420 2036 3400

Recs

50 100 150 200 250
2300 3300 2815 2820 2500 2570 2450
2450 3475 3075 2960 2755 2585 2850
2480 3450 3075 2755 2570 2400 2785
500 2470 3450 3475

Cold test See next page

75 Fahr 42 Fahr

2300 3300 2190 3180
2450 3475 2305 3400
2480 3450 2195 3180
4653 400 2500 500
56 2400 3764 2390 1500 2385 3450
57 2400 3470 2135 3117 2360 3270
1890 3155 2100 3215

4649 Fe Used of 4646 Except Oct. 31, 10.
used 8 lb weight.
29 dumps wt 10.887
4650 Fe 28 " " 10.783
4651 31 " " 10.822
21% KOH + 2 gm LiOH
Average about 373 milligms per dump.
Too hard to crimp and coagulate properly.

4652 Fe Used of 4646 Except Oct. 31, 10.
used 10 lb weight. Had to use tool steel dump.
32 dumps wt 11.195
4653 Fe 34 " wt 11.181
4654 32 " 10.034
21% KOH + 2 gm LiOH
Average about 327 milligms per dump.
Too hard to crimp or coagulate properly.

Oct. 31, 10

4655 Fe Used of 4646 Except
used 14 lb weight
27 dumps wt 11.412
4656 Fe 30 " wt 11.697
4657 Fe 29 " " 11.522
21% KOH + 2 gm LiOH
Average about 412 milligms per dump.
Too hard to crimp or coagulate properly.

	558		6.0	
4655	2300	2270	2000	3300
56	2400	2075	1965	3255
57	2050	2100	1935	3170

This is good on Cold test,

Nov. 10, 10.

4658 Fe 5 gm Fe pockets for Holland
Snow Min # 1849.
21% KOH + 2 gm LiOH per 175 cc

wt 5.000
" 5.000

4659 Duplicates start 4695

4660 Fe Dup of 4658 Except
23% KOH + 2 gm Li OH per 175 cc

wt 5.000 Nov. 10, 10.

4661 " 5.000

4662 Dup of 4658 Except
25% KOH + 2 gm Li OH per 175 cc

Nov. 10, 10.

wt 5.000

4663 " 5.000

4664 Dup of 4658 Except
27% KOH + 2 gm LiOH per 175 cc

wt 5.000 Nov. 10, 10.

4665 " 5.000

ng cold 42

ng "

ng "

~~ng~~ shows something not much at 42 days.

4666 Same of 4658 Except
21% KOH + 2 gms LiOH + 1 gm KCl per 17.5 cc
wt 5.000 Nov. 10, 10
4667 " 5.000

4668 Same of 4658 Except
21% KOH + 2 gm LiOH + 3 gms KCl per 17.5 cc
wt 5.000 Nov. 10, 10.
4669 wt 5.000

4670 Same of 4658 Except
21% KOH + 2 gm LiOH + 5 gms KCl per 17.5 cc
wt 5.000 Nov. 10, 10.
4671 " 5.000

4672 Same of 4658 Except
21% KOH + 2 gm LiOH + 1 gm KBr per 17.5 cc
wt 5.000 Nov. 10, 10
4673 " 5.000

4674 Help of 4658 Except
21% KOH + 2 gm LiOH + 3 gms KBr per 175 cc
wt 5.000 Nov. 10, 10.
4675 " 5.000

4676 Help of 4658 Except
21% KOH + 2 gm LiOH + 5 gms KBr per 175 cc
wt 5.000 Nov. 10, 10.
4677 " 5.000

Nov. 16, 10.
4678 1349 Fe mix
21% KOH + 2 gm LiOH + 2 gms KCl run
regular once at both rates, then run in
ice chest (Run against 4679 wt 5.000
Regular tube used " 5.000
4679 Duplicates starts at # 4715 Fe

4680 Help of 4678 Except Nov. 16, 10
21% KOH + 2 gm LiOH + 3 gms KCl
wt 5.000
4681 " 5.000

4682 Clup of 4678 Except Nov. 16, 10.
21% KOH + 2 gm LiOH + 5 gms KCl.
wt 15.000
4683 " 5.000

4684 Clup of 4678 Except Nov. 16, 10.
21% KOH + 2 gm LiOH + 3 gms KCl and run against tubes from Collection 621. NiOH2.
12% Bismuth green. wt 5.000
4685 " 5.000

4686 Clup of 4678 Except Nov. 16, 10.
25% KOH + 2 gms LiOH
wt 5.000
4687 " 5.000

4688 Clup of 4678 Except Nov. 16, 10.
27% KOH + 2 gms LiOH.
wt 5.000
4689 " 5.000

4690 Clup of 4678 Except Nov. 16, 10.
21% KOH + 2 gm LiOH + 3 gms Hydroxide.
wt 5.000
4691 wt 5.000

4692 Dup of 4678 Fe pocket Nov. 16, 10.
18% KOH + 3 gms Na OH + 6 gms Li OH
wt 5.000
4693 " 5.000
All the irons in this series should have regular runs + then run in ice chest

4694 Magnetic Iron Fe_3O_4 Nov 18, 10.
Obtained by decomposing of ferrous ammonium pyrophosphate by boiling with KOH.
21% KOH + 2 gm LiOH Run Regular
Put up with 4 michel tubes.
Pressed into cake at 300 atms + Corrugated at 300 atms
wt 5.000.
very bulky

4695 Fe Dup of Series of 4658 Fe Nov 23 10.
Fe pocket cut to cut 5 gram iron mix
Fe Mix 1491.
21% KOH + 2 gm LiOH till formed then
then run regular in 21% KOH + 2 gm LiOH
wt 5.000.
4696 " 5.000

4697 Heup of 4660 Nov. 23, 1
Iron Mix 1491
21% KOH + 2 gm LiOH after forming cha
solution to 23% KOH + 2 gms LiOH per 175 cc
wt 5.000
4698 " 5.000

4699 Heup of 4662 Nov. 23, 1
Iron Mix 1491
21% KOH + 2 gm LiOH after forming cha
solution to 25% KOH + 2 gms LiOH.
wt 5.000
4700 " 5.000

4701 Heup of 4664 Nov. 23,
Iron Mix 1491
21% KOH + 2 gm LiOH after forming chang
solution to 27% KOH + 2 gms LiOH.
wt 5.000
4702 " 5.000

4703 Heup of 4666 Nov. 23, 1
Iron Mix 1491
21% KOH + 2 gm LiOH after forming
change solution to 21% KOH + 2 gm LiOH
+ 1 gm KCl per 175 cc
wt 5.000
4704 " 5.000

Low

4705-6

1570	1580
1800	1900
1795	1865
4707-8	
1500	1575
1675	1850
1700	1850
4709-10	
1500	1535
1700	1750
1700	1760
4711-12	
1540	1575
1765	1800
1800	1800

4705 Clips of 4668 Nov. 23, 10.
Iron wire 1491
21% KOH + 2 gm LiOH after forming change
solution to 21% KOH + 2 gm LiOH + 3 gms
KCl per 175cc wt 5.000
4706 " 5.000

4707 Clips of 4670 Nov. 23, 10.
Iron wire 1491
21% KOH + 2 gm LiOH after forming change
solution to 21% KOH + 2 gm LiOH + 5 gms
KCl per 175cc wt 5.000
4708 " 5.000

4709 Clips of 4672 Nov. 23, 10.
Iron wire 1491
21% KOH + 2 gm LiOH after forming change
solution to 21% KOH + 2 gm LiOH + 1 gm
K.Br per 175cc wt 5.000
4710 " 5.000

4711 Clips of 4674 Nov. 23, 10.
Iron wire 1491
21% KOH + 2 gm LiOH after forming change
solution to 21% KOH + 2 gm LiOH + 3 gms
K.Br wt 5.000
4712 " 5.000

4713–14	
1575	1570
1850	1850
1850	1855
4715–16	
1500	1400
1680	1585
1700	1600

4719–20	
1515	1550
1730	1700
1730	1700

750 ma
1425–1320 – Very high –

4713 Slip of 4676 Nov. 23, 10.
Brown Mix 1491
21% KOH + 2 gm LiOH after forming change solution to 21% KOH + 2 gm LiOH + 5 gms KBr
wt 5.000
" 5.000
4714

4715 Slip of 4678 Nov. 23, 10.
Brown Mix 1491
21% KOH + 2 gm LiOH after forming change sol. to 21% KOH + 2 gm LiOH + 2 gm KCl
wt 5.000
" 5.000
4716

4717 Slip of 4680 Nov. 23, 10.
Brown Mix 1491
21% KOH + 2 gm LiOH after forming change sol. to 21% KOH + 2 gm LiOH 3 gm KCl
wt 5.000
" 5.000
4718

4719 Slip of 4682 Nov. 23, 10.
Brown Mix 1491
21% KOH + 2 gm LiOH after forming change solution to 21% KOH + 2 gm LiOH + 5 gms KCl.
wt 5.000
" 5.000
4720

4721 Sleeve of 4684 Nov. 23/10.
Snow Mix 1491
21% KOH + 2 gm LiOH after forming change
solution to 21% KOH + 2 gm LiOH + 3 gms KCl
This group is to be run against Edison Bi green 64
12½% Bi wt 5.000
4722 " 5.000

4723 Sleeve of 4686 Nov. 23/10.
Snow Mix 1491
21% KOH + 2 gm LiOH after forming change
sol. to 25% KOH + 2 gms LiOH.
wt 5.000
4724 " 5.000

4725 Sleeve of 4688 Nov. 23/10.
Snow Mix 1491
21% KOH + 2 gm LiOH after forming change
sol. to 27% KOH + 2 gms LiOH
wt 5.000
4726 " 5.000

4727 Sleeve of 4690 Nov. 23/10.
Snow Mix 1491
21% KOH + 2 gm LiOH after forming change
sol to 21% KOH + 2 gm LiOH + 3 gms
Zinc Hydroxide
wt 5.000
4728 " 5.000

	50 1/4	1/2	150		200 1/2	1/2	250	
4731	1740	2235	1465	1945	1275	1760	1320	1370
4732	1745	2640	1360	1800	1050	1290	1135	1170
4733	1880	2650	1120	1485	615	740	985	1210
4734	1775	2650	1235	1830	1225	1490	1300	1730
4735	1800	2770	1170	1765	850	1310	1115	1460
4736	1865	2800	1250	1740	1095	1490	1090	1380
4737	1720	2610	1300	1865	1160	1600	1180	1585
4738	1720	2695	1270	1740	775	1060	990	1260
4739	1865	2535	1460	2000	1165	1580	1350	1830
4740	1835	2770	1370	1970	1090	1475	1115	1490
4741	1725	2640	1300	1790	1060	1335	1200	1600
4742	1600	2390	1280	1685	1050	1325	1090	1260

4729 Dup of 4692 Nov. 23, 10.
Draw Mix 1491
21% KOH + 2 gm LiOH after forming change solution to 18% KOH + 3 gm NaOH + 2 gm LiOH.
lot 5.000
4730 " 5.000
All the irons in this series are to be run regular, then run in ice chest. Series from 4715 to 4730 Inc.

4731 Draw Mix 1491 Dec. 2, 10
Form up by current with nickel strips in 27% KOH after forming change cell & put up with y tube in 21% KOH + 2 gm LiOH
lot 5.000
4732 " 5.000

4733 Dup of 4731 Except Dec. 2, 10,
30% KOH for forming with in strips.
lot 5.000
4734 " 5.000

4735 Dup of 4731 Except Dec. 2, 10.
33% KOH for forming.
lot 5.000
4736 " 5.000

4737	Duplicate of 4731 Except 20% NaOH for forming.	Dec. 2/10.
	wt 5.000	
4738	" 5.000	
4739	Duplicate of 4731 Except 25% NaOH for forming.	Dec. 2/10.
	wt 5.000	
4740	" 5.000	
4741	Duplicate of 4731 Except Saturated Li OH for forming.	Dec. 3/10.
	wt 5.000	
4742	5.000	
4743	Duplicate of 4695	Dec. 3/10.
	wt 5.000	
4744	" 5.000	
4745	Duplicate of 4697	Dec. 3/10.
	wt 5.000	
4746	5.000	
4747	Duplicate of 4699	Dec. 3/10.
	wt 5.000	
4748	" 5.000	

4749	Dup of 4701. wt 5.000	Dec. 3, 10.
4750	" 5.000	
4751	Dup of 4703. wt 5.000	Dec. 3, 10.
4752	5.000	
4753	Dup of 4705 wt 5.000	Dec. 3, 10.
4754	" 5.000	
4755	Dup of 4707 wt 5.000	Dec. 3, 10.
4756	"	
4757	Dup of 4709 wt 5.000	Dec. 3, 10.
4758	" 5.000	
4759	Dup of 4711 wt 5.000	Dec. 3, 10
4760	" 5.000	
4761	Dup of 4713 wt 5.000	Dec. 3, 10.
4762	5.000	

4763	Hlup of 4715	Hlee. 3, 10.
	wt 5,000	
4764	" 5,000	
4765	Hlup of 4717	Hlee. 3, 10.
	wt 5,000	
4766	" 5,000	
4767	Hlup of 4719	Hlee. 7, 10.
	wt 5,000	
4768	" 5,000	
4769	Hlup of 4721	Hlee. 7, 10.
	wt 5,000	
4770	" 5,000	
4771	Hlup of 4723	Hlee. 7, 10.
	wt 5,000	
4772	" 5,000	
4773	Hlup of 4725	Hlee. 7, 10.
	wt 5,000	
4774	" 5,000	
4775	Hlup of 4727	Hlee. 7, 10.
	wt 5,000	
4776	5,000	

4777 Dup of 4729 Dec. 7, 10
wt 5.000
4778 " 5.000

4779 - 4780 - 4781 April 5, 11
Regular iron pockets machine loaded & ground which have been plated & annealed but burrs not ground off. Run with 4 tubes
Iron mix # 1647
average wt 8.192
21% KOH + 2 gm LiOH Run regular bot test

4782 - 4783 - 4784 April 5, 11
Regular iron pockets machine loaded & ground not nickel plate & but annealed. Run with four tubes
Iron mix # 1647
average wt of active material = 8.192
21% KOH + 2 gm LiOH Run regular bot test

4785 Iron pockets not plated but annealed. Run with 4 tubes April 5, 11
21% KOH + 2 gm LiOH Run regular bot test
wt 5.000
4786 " 5.000 Iron mix # 1516
4787 " 5.000

4788 Greenly Iron #55 Apr. 5, 11.

wt 5.000

21% KOH + 2 gm LiOH Run regular

4789 Greenly Iron #56 Apr. 5, 11.

Pressed into a cake.

wt 5.000

21% KOH + 2 gm LiOH Run regular

4790 Greenly Iron #58 Apr. 5, 11

wt 5.000

21% KOH + 2 gm LiOH Run regular

4791 Greenly Iron #59 Apr. 5, 11

wt 5.000

21% KOH + 2 gm LiOH Run regular

4792 Greenly Iron #61 April 5, 11.

wt 5.000

21% KOH + 2 gm LiOH Run regular

	50			150
1635 – 2585	1	½	1100	
	1790	2790	1525	1360

	250	½	1	3000
4792	1155	1470	1210	580 1100

885

Ng

315

Ng

4793 Greenly Iron #64 April 12, 11

wt 5.000

21% KOH + 2 gm LiOH Run regular hot test

4794 Greenly Iron #76 April 12, 11.

wt 5.000

21% KOH + 2 gm LiOH Run regular hot test

4795 Hydrated Magnetic Iron Apr 12, 11.

wt 5.000

21% KOH + 2 gm LiOH Run reg

dehydrated in hydrogen current at 380°F

4796 Goldstein's magnetic Iron Apr 12, 11.

Fe_3O_4

wt 5.000

Hydrated in current of hydrogen at 250-260° F

21% KOH + 2 gm LiOH Run reg

4797 Goldstein magnetic Iron Apr 17/11
Fe_3O_4 $4H_2O$
wt 5.000
21% KOH + 2 gm LiOH Run regular

4798 Goldstein Hydrated magnetic Iron Apr 17 11.
dehydrated in a hydrogen current
at 260°F
wt 5.000
21% KOH + 2 gm LiOH Run regular.

4799 Reg iron mix 1754 June 17, 11.
For Mr. Hutchinson
Average wt 5.109
4800
4801
21% KOH + 2 gm LiOH Run regular

4802 Reg iron mix #1779 June 24, 11.
For Mr. Hutchinson
wt 5.780
4803 " 5.380
4804 " 5.480
21% KOH + 2 gm LiOH Run regular

4805

		1V	1/2	100	
16 Cold press	300	1180	1820	5	10
		1460	2285	475	950

5 | 1850 / 370

4 | 1460 / 365

		1V	1/2	100	1/2
Cold 5 hrs		1220	1365	1070	1565
		1235	1350	1075	1570

4807 | 152 865 - 1370 / 945 - 1390 | Co

5 cold	1V	5V
4809	135	155
4810	160	225

C.O.

4805 July 14, 1911.

Made on rolls from dry materials.
Run with 2 tubes each
21% KOH + 2 gm LiOH Run regular
Picked H by RA - finest yet - Cheap $

wt 5.000
4806 " 5.000

4807 July 25, 1911.

Made from Dry Sulphate in rolls reduced by hydrogen. This lot has mercury in it.
Run against two tubes
21% KOH + 2 gm LiOH Run regular

wt 4.000
4808 " 4.000

Note only 4 grammes

4809 Grainly Iron #75 Aug 10, 11.

wt 5.000
4810 " 5.000

run with 2 tubes
21% KOH + 2 gm LiOH Run regular

5 cold	1 V	5 V	
4811	145	160	C.O.
4812	180	235	

5 cold	1 V	½ V.	
4813	180	195	
4814	180	195	

4811 Greenly Iron #76 Aug 10, 11.

wt 5.000

4812 " 5.000

21% KOH + 2 gm LiOH Run regular
Run with tube

Run with tube

4813 Greenly Iron #77 Aug 15, 11.

wt 5.000

4814 " 5.000

21% KOH + 2 gm LiOH Run regular

4815 Greenly Iron #78 Aug 15, 11.

wt 5.000

4816 " 5.000

21% KOH + 2 gm LiOH Run regular

Run with 2 tubes

5th cold run		10th cold run		
I.V.	.5V.	I.V.	.5V.	
45	70	40	50	4817
270	425	265	350	4818
490	775	550	900	4819
775	1200	825	1250	4820
875	1405	985	1565	4821
700	1120	820	1300	4822
850	1340	985	1560	4823
800	1280	920	1430	4824

4817 Greenly Iron #79 Aug 21, 11.

wt 5,000

4818 " "

21% KOH + 2 gm LiOH. Run regular

run with 2 tubes

Run with 2 tubes

4819 Greenly Iron #80 Aug 21, 11.

wt 5,000

4820 " 5,000

21% KOH + 2 gm LiOH Run regular

Run with 2 tubes

4821 Greenly Iron #81 Aug 21, 11.

wt 5,000

4822 " 5,000

21% KOH + 2 gm LiOH Run regular

Run with 2 tubes

4823 Greenly Iron #82 Aug 21, 11.

wt 5,000

4824 " 5,000

21% KOH + 2 gm LiOH Run regular

5th cold run		10th cold run		
I.V.	I.V.	I.V.	I.V.	
740	1155	840	1340	4825
885	1680	990	1550	4826
840	1280	925	1435	4827
950	1490	1065	1640	4828
860	1360	1020	1595	4829
865	1360	1025	1565	4830
9.00	1610	1050	1625	4831
910	1675	1085	1660	4832

4825 Greenly Iron #83 Aug 21, 11.

wt 5.000

4826 " 5.000

21% KOH, 2 gm LiOH Run regular

Run with 2 tubes

4827 Greenly Iron #84 Aug 21, 11.

Run with 2 tubes

wt 5.000

4828 " 5.000

21% KOH, 2 gm LiOH Run regular.

Run against 2 tubes

4829A Greenly Iron #85 Aug 2 11.

wt 5.000

4830A " 5.000

21% KOH, 2 gm LiOH Run regular

4831A Greenly Iron #86 Aug 2 11.

21% KOH, 2 gm LiOH Run regular

wt 5.000

4832 " 5.000

Run against 2 tubes

5th cold run		10th cold run		
I.V.	.5V.	I.V.	.5V.	
900	1140	1060	1600	4833
730	1120	850	1295	4834
780	1230	900	1395	4835
775	1235	850	1300	4836
85	110	110	170	4837
90	110	110	165	4838
95	115	120	180	4839
90	110	110	180	4840

4833 Greenly Iron #87 Aug 29, 11. Run with stirrer

wt 5.000
4834 " 5.000
21% KOH + 2 gm LiOH Run regular

4835 Greenly Iron #88 Aug 29 11. Run against stirrer

wt 5.000
4836 " 5.000
21% KOH + 2 gm LiOH Run regular

4837 Greenly Iron #89 Aug 29 11. Run against stirrer

wt 5.000
4838 " 5.000
21% KOH + 2 gm LiOH Run regular

4839 Greenly Iron #90 Aug 29 11. Run against stirrer

wt 5.000
4840 " 5.000
21% KOH + 2 gm LiOH Run regular

5th cold run I.V.	5th cold run .5V.	10th cold run I.V.	10th cold run .5V.	
900	1450	1060	1645	4841
870	1390	1000	1555	4842
855	1355	985	1595	4843
775	1220	865	1345	4844
700	1390	900	1590	4845
740	1445	920	1660	4846
700	1360	890	1625	4847
735	1175	845	1275	4848
4947	1575 - 2240			
4948	1665 2490			

4841 Greenly Iron #91 Aug 29, 11.
Run against 2 tubes

wt 5.000
4842 " 5.000
21% KOH + 2 gm LiOH Run regular

4843 Greenly Iron #92 Aug 29, 11.
Run against 2 tubes

wt 5.000
4844 " 5.000
21% KOH + 2 gm LiOH Run regular

4845 Greenly Iron #93 Aug 29, 11.
Run against 2 tubes

wt 5.000
4846 " 5.000
21% KOH + 2 gm LiOH Run regular

4847 Greenly Iron #94 Aug 29, 11.
Run against 2 tubes

wt 5.000
4848 " 5.000
21% KOH + 2 gm LiOH Run regular

5th cold run I.V.		½ V	10th cold run I.V.	½ V	
735		1400	890	1590	4849
925		1645	1025	1580	4850
725		1280	900	1490	4851
775		1370	960	1650	4852
1270		2090	1430	2320	4853
1365		2295	1540	2390	4854
4853	100 1480	½ 2435	150 1370	2780	
54	1586	2725	1395	2300	
1300		2135	1450	2260	4855
1365		2290	1520	2330	4856
4855	100 1450	½ 2460	150 1400	2375	
56	1575	2448	1300	2270	

4849 Greenly Iron #95 Aug 29, 11.
Run against tubes
wt 5,000
4850 " 5,000
21% KOH + 2 gm LiOH Run regular

4851 Greenly Iron #96 Aug 29, 11.
wt 5,000
4852 " 5,000
21% KOH + 2 gm LiOH Run regular
Run against tubes

4853 Greenly Iron #97 Sept 6, 1911.
Run against tubes
wt 5,000
4854 " 5,000
21% KOH + 2 gm LiOH Run regular

4855 Greenly Iron #98 Sept 6, 1911.
Run against tubes
wt 5,000
4856 " 5,000
21% KOH + 2 gm LiOH Run regular

5th cold run				10th cold run				
I.V.		.5V.		I.V.		.5V.		
1360		2285		1515		2395		4857
1280		2065		1460		2335		4858
4859	100	1570	1/2	2465	1/2	1970	2190	10
54	1500		2430		1970		2370	
1360		2285		1520		2380		4859
1300		2165		1475		2365		4860
4859	100	1585	1/2	2460	1/2	1985	2300	10
60	1500		2400		1945		2275	

4857 Greenly Iron #49 Sept 6, 1911.
Run against a tube
Pressed with Mr Arbogast dies.
wt 5,000
4858 " 5,000
21% KOH + 2 gm LiOH Run regular

4859 Greenly Iron #100 Sept 6, 1911
Run against a tube
wt 5,000
4860 " 5,000
21% KOH + 2 gm LiOH Run regular

4861 General Iron mix #1799 Sept 26, 11.
Run against 4 tubes
Pressed, Mr Arbogast dies - 97A + 108A
wt 5,000
4862 " 5,000
21% KOH + 2 gm LiOH Run regular

4863 Reg Iron mix #1830 Sept 20, 11.
Run against 4 tubes
Pressed mr Arbogast dies 97A & 108A
wt 5,000
4864 " 5,000
21% KOH + 2 gm LiOH Run regular

4865 Reg Iron min #1831 Sept 26, 11.
Run against 4 tubes
Pressed, in Autogest dies 97 A & 108
wt 5.000
4866 " 5.000
21% KOH + 2 gm LiOH Run regular

4867 Reg Iron min #1835 Sept 26, 11.
Run against 4 tubes
Pressed, in Autogest dies. 97 A &
wt 5.000
4868 " 5.000
21% KOH + 2 gm LiOH Run regular

4869 Reg Iron min #1849 Sept 26, 11.
Run against 4 tubes
Pressed in Autogest dies 97 A & 108 A
wt 5.000
4870 " 5.000
21% KOH + 2 gm LiOH Run regular

4871 Reg Iron min #1858 Sept 26, 11.
Pressed in Autogest 97 A & 108 A Run against 4 tubes
wt 5.000
4872 " 5.000
21% KOH + 2 gm LiOH Run regular

4873 Dup of 4871 Sept 26, 11.
Run against tube

wt 5.000
4874 " 5.000
Pressed at 100A. & 150A in our pump with Mr Arbogast dies.
21% KOH + 2 gm LiOH Run regular

4875 Dup of 4871 Sept 26, 11.
Run against tube

wt 5.000
4876 " 5.000
21% KOH + 2 gm LiOH Run regular

Pressed at 97A & 108A in our pump and our dies.

4877 Dup of 4871 Sept 26, 11.
21% KOH + 2 gm LiOH Run against tube

wt 5.000
4878 " 5.000

Pressed at 100A & 150A in our pump and our dies.
21% KOH + 2 gm LiOH Run regular

	1st Run (cold)	4th Run (cold)	
4879	1185	95 - 150	
80	1090	870 . 1030	
4881 -	1150	0 - 12	6
82	1060	5 - 10	1
4883	935	35 45	
84	880	30 40	

Fleming Co

4879 Goldstein, Iron #820 Oct 1911.

6% Hg_0

Run regular
Callipers
100 top 99
wt 5,000
4880 " 5,000 108 middle 105
116 bottom 105

4881 Goldstein Iron #821 Oct, 1911.

6% Hg_0

Run regular
Callipers
wt 5,000 82 top 79
4882 " 5,000 90 middle 90
96 bottom 96

4883 Goldstein #822 Iron Oct, 1911
6% Hg_0

Run regular
Callipers
wt 5,000 110 - top - 110
4884 " 5 000 97 - middle - 100
90 - bottom - 91

IV
395 675
465 775 ‖ 10

4885 goldstein Electrolytical Iron #1 Oct 18, 11.
+ 60% Hg0.

21% KOH + 2 gm LiOH Run regular

		Callipers
	wt 5.000	90 – 95
4886	" 5.000	100 middle 100
		105 – 110

4887 Electrolytical Iron #1 goldstein Oct 18, 11:
without Hg0

21% KOH + 2 gm LiOH Run regular

		Callipers
	wt 5.000	107 – 100
4888	" 5.000	100 middle 110
		105 – 115

4889 Eletrolytical Iron #1 goldstein Oct 30, 11.
60% Hg0

21% KOH + 2 gm LiOH Run regular

	wt 5.000
4890	" 5.000

IV	1/2	
210	260	Co
215	265	

IV	1/2	
30	40	Co
15	20	

IV	1/2	
595	800	Co
760	1350	

4891 Electrolytical Iron #2 Goldstein Oct 30/11.
Washed with alcohol and dried in the air.

21% KOH + 2 gm LiOH Runs regular

wt 5.000

4892 " 5.000

4893 Electrolytical Iron #4 Goldstein Oct 30/11.
Left for 5 days in 15% KOH solution
dried in the air.

21% KOH + 2 gm LiOH Runs regular

wt 5.000

4894 " 5.000

4895 Fe = 852 Goldstein Oct 30/11.
21% KOH + 2 gm LiOH Runs regular

wt 5.000

4896 " 5.000

IV	1/2	
825	1555	Co
585	1675	

Cal. –	IV		4899 / 4900	55
4899	1640	2500		1/2
4900	1700	2590	1795 – 2685	
4901	1550	2240	1840 – 2800	
4902	1660 –	2490	1700 2465	
			1880 2795	

100

1200	1490

4899 1640
4900 1740
901 1560

1140	1650	Co
1090	1575	

4897 Goldsteins 251 Iron 30, 11.
Run regular

wt 5.000
4898 " 5.000

4899 RA Spec # 1486 Iron Nov. 6, 11
Run regular
Mass Iron 6% Ago

wt 5.000
4900 " 5.000
4901 " 5.000
4902 " 5.000

4903 Ra Sp Spec #1493 Nov 8, 11.
21% KOH . 2 gm LiOH Run regular

wt 5.000
4904 " 5.000

4905 Ra7e #1494 Nov. 10, 11.

Iron reduced by hydrogen cooled by nitrogen passed.

wt 5,000

4906 " 5,000

Run regular

4907 Goldstein #8537e Nov. 13, 11.

21% KOH + 2 gm LiOH Run regular

wt 5,000

4908 " 5,000

4909 Goldstein #854 Nov. 13, 11.

Iron made by rollers reduced & Selfheated

21% KOH + 2 gm LiOH Run regular

wt 5,000

4910 " 5,000

	50	12	100	
4911 —	3000	4425	2900	2370

1 V 1/2

560	675	RA says Sulphide — ✓ ug
550	583	

1 V

900	1615	ug
215	245	

T.R. #1852

4911 1/8 tube loaded with Iron Nov 13, 11.
[illegible] Run regular
Average wt of each tube - 4.308
17.232

4912 Electrolytical Iron Nov. 16, 11.
boiled with KOH ammonia sulphate
[illegible] Run regular

wt 5.000
4913 " 5.000 Goldstein

4914 Goldstein #8557 Fe Nov 18, 11.
6 o/o Ago Iron made by Zollers,
reduced in hydrogen Delphected
21% KOH + 2 gm LiOH Run regular

wt 5.000
4915 " 5.000

4916 Goldstein #8567 Fe Nov 18, 11.
Reduced by H replaced by N.
wt 5.000 6 o/o Ago
4917 wt 5.000
21% KOH + 2 gm LiOH Run regular

Nothing —

4920 21	175 165			Co

	1 V	1/24		
4922 23	2000 1955	2875 2890		

4918 Goldstein Electrolytical Chem Nov 18, 11.
Fuel from alkaline dried on the fench 60% H_2O
21% KOH + 2 gm LiOH Run regular
Pressed into 5 gram cake
wt 5,000
4919 wt 5,000

4920 Goldstein Electrolytical Chem. Nov 24, 11
Containing 60% H_2O and small amt of KOH dried in the vacuum
21% KOH + 2 gm LiOH Run regular
wt 5,000
4921 " 5,000

4922 Ra 7e Cp# 1506 Nov. 24, 11.
Iron mix 60% H_2O Iron cooled in H
H replaced by N P_{O_2} 3 put through 180 mesh.
Run regular
wt 5,000
4923 " 5,000

			50		150	1/2
4924	1725	2615	1880	2840	1740	2560
25	1980	2915	1970	2880	1790	2490

	200	
4925	1890	1885

4926	1260	1985	950	1360	
27	1395	1975	1200	1540	

4928	1515	2190	1400	1925	
29	1560	2220	1360	1930	

4930	1625	2250	1400	1955	
31	1560	2200	1345	1900	

4924 RA 7le Expm #1507. Nov. 24 11.
Iron cooled in hydrogen H replaced by nitrogen
Run regular

wt 5.000
4925 " 5.000

4926 RA 7le Expm #1510 Nov. 24 11.
1.35 % Hgo Through 30 on 40 mesh
Run regular

wt 5.000
4927 " 5.000

4928 RA 7le Expm #1511 Nov. 24 11.
40 on 50 mesh 1.58 % Hgo
Run regular

wt 5.000
4929 " 5.000

4930 RA 7le Expm #1512 Nov. 24 12
Run regular
wt 5.000 50 on 60 mesh
4931 " 5.000 2.18 Hgo

4932	1630	2330	50	1530	2265	150	1425	2040	
33	1600	2260		1615	2344		1560	2183	
4934	1570	2250		1280	1800	150	1110	~~1445~~	
35	1580	2150		1310	1770		885	1075	
4936	1730	2450	50						
37	1690	2460							
4938	1990	3010		1860	2640	150	1640	2480	
39	1880	2770		1900	2100		1560	2185	
4940	1760	2575		1770	2520	150	1480	2230	
41	1750	2665		1640	2600		1530	2300	

Note this

4932 RA 7e Effen # 1513 Nov 24, 11.
60 on 70 mesh 2.91 Hgo
Run regular

wt 5,000

4933 wt 5,000

4934 RA 7e Effen # 1514 Nov 24 11.
70 on 80 mesh 1.69 o/o Hgo
Run regular

wt 5,000

4935 wt 5,000

4936 RA 7e #1515 Effen Nov. 24, 11.
80 on 100 mesh 3.02 o/o Hgo
Run regular

wt 5,000

4937 " 5,000

4938 RA 7e Effen #1516 Nov. 24, 11.
100 on 180 mesh 3.48 Hgo
Run regular

wt 5,000

4939 " 5,000

4940 RA 7e Effen #1517 Nov 25, 11.
through 180 mesh 7.45 o/o Hgo
Run regular

wt 5,000 4941 wt 5,000

4942 43 | 1v 1720 | [illegible] |

4944 | | |

4945 46 | | 50 1300 1360 | 1/2 1730 2040 | 10

4947 48 | 1v 1475 1475 | 1/2 2060 2180 | 50 1385 1480 | 2025 2150

4942 Goldstein #820 Iron Dec 2, 11.
Reduced in H replaced by N full sulphates
21% KOH + 2 gm LiOH Run regular

wt 5.000
4943 " 5.000

4944 Goldstein #821 Dec 2, 11.
Reduced in H replaced by nitrogen full sulphates
21% KOH + 2 gm LiOH Run regular
wt 5.000

4945 Goldstein iron #786 Dec 2, 11
Reduced in H replaced by nitrogen
21% KOH + 2 gm LiOH Run regular
wt 5.000
4946 " 5.000
Slight trace sulphates

4947 Dup of 4922+23 Dec 19, 11.
21% KOH + 2 gm LiOH Run regular
calipers
wt 5.000 tip 95 93
4948 " 5.000 middle 90 92
bottom 75 80

50

4949	1160	1790	1475	2260
50	1075	1690	1275	2060

50

4951	1230	1830	1470	2260
52	1120	1690	1190	2165

4949 Pa Fe Exper #1527 Dec 13, 11.
Iron reduced & cooled in hydrogen. It replaced by air passed thru capillary .05 in diam mixed with 60% H_2O air passed for 2 hrs. S.W. 24.05
21% KOH + 2 gm LiOH Run regular

wt 5.000 calipers
4950 " 5.000 top 91 - 89
middle 81½ - 85
bottom 76 - 75

4951 Pa Fe Exper #1536 Dec 13, 11.
Reg Fe O_3 passed through 30 mesh reduced and cooled in hydrogen, replaced air passed thru capillary tube .05 in diam for 2 hrs. 60% H_2O S.W. 23.1 g
21% KOH + 2 gm LiOH Run regular

wt 5.000 calipers.
4952 " 5.000 top 91 - 89
middle 84 - 82
bottom 76 - 72

50 1/2

4953	1520	2265	1255	1740	
54	1725	2430	1535	2200	
4955	1600	2220	1540	2165	
56	1695	2465	1495	2250	
4957	1695	2440	1420	2570	
58	1630	2370	1630	2460	

4953 RA 7e Exper #1538 Dec 19, 11.
No Hg°
21% KOH + 2 gm LiOH Run regular
top 93 - 92
wt 5,000 middle 82 - 90
4954 " 5,000 bottom 74 - 90
pressed into cake

4955 RA 7e Exper #1538 Dec 19, 11.
20% Hg°
21% KOH + 2 gm LiOH Run regular
Pressed into cake
wt 5,000 top 82 - 97
4956 " 5,000 middle 90 - 88
bottom 90 - 88

4957 RA 7e Exper #1538 Dec 19, 11.
40% Hg°
21% KOH + 2 gm LiOH Run regular
top 92 - 99
wt 5,000 middle 88 - 87
4958 " 5,000 bottom 82 - 78
Pressed into cake

			50	1/2
4959	1650	2400	1790	2665
60	1560	2280	1665	2480
4961	1550	2260	1575	2365
62	1540	2245	1595	2255
4963	1765	2585	1740	2590
64	1635	2470	1765	2630
4965	1715	2595	1700	2690
66	1775	2600	1795	2710

4959 RA 7e Cafen #1538 Dec 19, 11.
60% H2O
21% KOH + 2 gm LiOH Run regular
top 88 - 86
wt 5,000 middle 86 - 86
4960 " 5,000 bottom 82 - 84
pressed into cake

4961 RA 7e Cafen #1538 Dec 19, 11.
80% H2O
21% KOH + 2 gm LiOH Run regular
top 86 - 88
wt 5,000 middle 85 - 91
4962 " 5,000 bottom 77 - 80
pressed into cake

4963 RA 7e Cafen #1538 Dec 19, 11.
100% H2O
21% KOH + 2 gm LiOH Run regular
top 93 - 88
wt 5,000 middle 91 - 88
4964 " 5,000 bottom 82 - 81

4965 RA 7e Cafen #1538 Dec 19, 11.
120% H2O top 98 - 88
21% KOH + 2 gm LiOH Run regular middle 88 - 87
wt 5,000 bottom 82 - 87
4966 " 5,000

			50	12
4967	1635	2485	1800	2640
68	1560	2290	1730	2565
4969	1695	2480	1775	2690
70	1555	2300	1525	2360
4971	765	1195		
72	670	1010		
4973	450	540		
74	480	570		

4967 RA The Expm #1538 Dec 19, 11.
14 o/o Hg o
21% KOH + 2 gm LiOH Run regular
wt 5.000 top 77 - 87 (calfpins)
4968 " 5.000 middle 90 - 83
bottom 100 - 85

4969 RA The Expm #1539 Dec 19, 11.
16 o/o Hg o
21% KOH + 2 gm LiOH Run regular
wt 5.000 top 92 - 81 (calfpins)
4970 " 5.000 middle 87 - 83
bottom 81 - 74

4971 Electrolytical Iron Dec 19, 11.
Made like sample from 11/14/11
Reduced and cooled in H 6 o/o Hg o
21% KOH + 2 gm LiOH Run regular
wt 5.000 top 72 - 77 (calfpins)
4972 " 5.000 middle 77 - 77
bottom 86 - 84
This batch contain sulphates

4973 Electrolytical Iron #4 Dec 19, 11.
Boiled with strong KOH solution
21% KOH + 2 gm LiOH Run regular
6 o/o Hg o
wt 5.000 top 81 - 99 (calfpins)
4974 " 5.000 middle 83 - 100
bottom 80 - 114

4975 770 1040
76 755 1050

	1st end	1/2 h	1	1/2	1 h	1/2
4977	1360	2050	1450	2190		
4978	1475	2050	1630	2300		
4979	2060	2975	1700	2510	1690	2320
4980	1885	2745	1670	2575	1690	2545
4981	1950	2960	1870	2650	1800	2625
4982	2025	3075	1800	2490	1800	2585

4975 Electolytic Iron #7 Dec 19, 11.
precipitated in presence of
hydroxylaminechloride
21% KOH + 2 gm LiOH Runnegular
wt 5.000 top - 107 - 112
4976 " 5.000 middle - 107 - 112
bottom - 98 - 105
6% H_2O

4977 RA Fe Exper #1539 Jan 5, 11.
6% H_2O
21% KOH + 2 gm LiOH Runnegular
top 88 - 91
wt 5.000 middle 81 - 91
4978 " 5.000 bottom 75 - 87

4979 RA Fe Exper #1541 Jan 5, 11.
All fines through 20 mesh 6% H_2O
21% KOH + 2 gm LiOH Runnegular
top 87 - 91
wt 5.000 middle 96 - 91
4980 " 5.000 bottom 85 - 89

4981 RA Fe Exper #1542 Jan 5, 11.
All fines through 20 mesh 6% H_2O
21% KOH + 2 gm LiOH Runnegular
wt 5.000 top 93 - 98 - 92
4982 " 5.000 middle 85 - 85 - 81
bottom

	1" cals	1/2	100			130	1/2
4983	2190	2275	1855	2690	2485	1945	2730
4984	1970	2710	1700	2485		1470	2270
4985	2075	3125	1865	2685		1875	2500
4986	2025	2910	1830	2600		1765	2510
4987	2175	3250	1740	2685		1745	2620
4988	2140	3200	1740	2530		1675	2525
4989	2140	3150	1880	2810		1890	2755
4990	2100	3225	1800	2530		1755	2530

Decreased pressure

4983 RQ7e Exper #1543 Jan 5, 11.
all fines thru 40 mesh 6% Hg°
21% KOH + 2 gm LiOH Run regular calipers
wt 5,000 top 97 - 84
4984 " 5,000 middle 94 - 93
bottom 91 - 87

4985 RQ7e Exper #1544 Jan 5, 11.
all fines thru 60 mesh 6% Hg°
21% KOH + 2 gm LiOH Run regular calipers
wt 5,000 top 89 - 82
4986 " 5,000 middle 90 - 98
bottom 90 - 96

4987 RQ7e Exper #1545 Jan 5, 11.
all fines thru 80 mesh 6% Hg°
21% KOH + 2 gm LiOH Run regular calipers
wt 5,000 top 97 - 92
4988 " 5,000 middle 97 - 97
bottom 87 - 92

4989 RQ7e Exper #1546 Jan 5, 11.
all fines thru 100 mesh 6% Hg°
21% KOH + 2 gm LiOH Run regular calipers
wt 5,000 top 85 - 87
4990 " 5,000 middle 97 - 99
bottom 91 - 88

	1" Cards	1/2	1.00		1.50	1/2
4991	2175	3260	1700	2340	1460	2095
4992	1920	2875	1690	2200	1285	1885

Note

	75 Tube	75 Tube	Cly 75 dia 35 Tube 1V
8	1890	2765	575
9	1820	2660	1240
11	1900	2625	1300
13	1790	2710	1150
14	2360	3275	1625
17	2290	3375	800
19	1925	2790	1375
20	2080	3015	1470
21	1875	2750	1200
24	1750	2560	1350
25	2100	3140	1690
29	1875	2450	1420

Copy

4991. RQ Fe Caper # 1547
all fines thru 180 mesh 60% Hg 5
21% [redacted] Run regular
wt 5,000 tip 93 - 89 (collector)
4992 " 5,000 middle 100 - 96
bottom 94 - 89

Iron Experiment Dec 28, 11.
RQ Fe 1538 (new iron) -

8	wt of tailings	2½ lb. dumps	23	wt.	6.91
9	" " "	2½ " "	22	"	6.91
11	" " "	2.91 " "	23	"	7.26
13	" " "	2.91 "	22	"	7.11
14	" " "	3.91 "	25	"	7.66
17	" " "	4.05 "	17	"	7.27
19	" " "	4.05 "	23	"	7.77
20	" " "	4.88 "	17	"	7.63
21	" " "	4.88 "	14	"	7.21
24	" " "	4.88 "	14	"	7.35
25	" " "	4.88 "	14	"	7.5
29	" " "	4.88 "	15	"	8.11

[redacted] Run regular

4993 Caper

	1 week	1/2	35 day		
4993	2065	2815			
4994	2175	3025			
40	1630	2580	1085	1100	
41	1755	2770	1155	1200	
42	1705	2580	570	575	
43	1690	2495	650	700	
44	1975	2735	900	810	
45	1880	2785	540	490	
46	2020	3016	1150	1160	
47	2050	3040	460	450	
49	1935	2875	440	515	

Nitrogen

Co

Co

4993 Rg Fe Cipin #1551 Jan 12.
Fe_2O_3 thru 100 mesh reduced at 800° p
cooled in H then the H replaced by N.
6% H_2O
This did not go to metal
Run regular
Then run ice cold test on board.
wt 5.000 Calipers
4994 " 5.000 top 112 — 112
middle 108 — 107
bottom 102 — 100

Iron experiment Jan 4, 1912
R.H. Fe 1538 6% H_2O

Weight of lamp 8#
Fall of lamp 4 3/4"

No of Pocket	No of Dumps	Size of Screen	wt. of Iron
45	20	80	6.290
46	22	"	6.285
47	21	50	6.430
49	21	"	6.175
42	20	120	5.490
43	21	"	5.745
44	21	"	6.170
40	22	180	7.195
41	21	"	7.420

(over)

			35 deg			
50			685	760		
51	1680	2510	675	700		

Run Regular and then see cold test on board.
21% KOH + 2 gm LiOH

Iron Experiment Jan. 5, '12
R.A. Fe 1538 6% HgO

50 See Iron Book
Weight 6.8 grams.
This pocket made with screen cut from tube stock imbedded in iron.
Run regular and then see cold test on board
21% KOH + 2 gm LiOH

See Iron Book
Iron Experiment Jan. 9, '12
R.A. Fe 1538 6% HgO

51 Weight about 7.2 grams
This pocket made with 4 small nickel wires, imbedded lengthwise in iron and making contact with pocket.
Run regular and then in cold test on board
21% KOH + 2 gm LiOH

Top .180
Mid .113
Bot .106

35 deg

52	2880	4225	1930	1880	100 mesh
53	2970	3970			

35 deg

54	2630	3990	1780	1680	
55	2600	3970	1360	1300	

52. Iron Experiment R.H. 1500
53 Fe_2O_3 screened thru 100 mesh, reduced by H. cooled in H replaced by N.
Mixed with 10% HgO (New Iron)
This Iron feeds with difficulty i.e. it clogs the machine.

		Top.	Mid.	Bot.
52	= 8.38 grams	.146	.139	.135
53	= 8.67 "	.145	.137	.130

Run regular then ice cold test on board.
21% KOH + 2 gm LiOH

New Iron — Duplicate
Iron Experiment R.H. 1500
55 Fe_2O_3 thru 100 mesh, reduced
54 and cooled in H. H replaced by N for 2 hours. 10% HgO 900°
This Iron clogs easily.

		Top.	Mid.	Bot.
55	= 8.10 gr	.123	.120	.117
54	= 8.82 "	.110	.107	.104

Run regular then ice cold test on board
21% KOH + 2 gm LiOH

35

56	2275	3350	160	280	
57	1590	2549	80	90	

Temperature of reduction too low

35 day

58	1380	2130	935	970	
59	1320	2080	895	950	

Temp reduction better higher than before

56 Iron Experiment 1551 R.F. Iron
57 Fe_2O_3 thru 100 mesh reduced at 800° Cooled in H then H replaced by N.
10% H_2O
This did not go to metal

Top Mid Bot
56 = 7.88 gm. .137 .133 .120
57 = 8.08 gm .142 .137 .127

Run regular thru ice cold test on Board
21% KOH + 2 gm LiOH

58 Iron Experiment 1552 P.A.
59 Fe_2O_3 screened thru 100 mesh. Reduced at 1000° cooled in H. H then replaced by N. 10% H_2O.

Top Mid Bot
58 = 14 temps 7.75 gm. .118 .110 .103
59 = 16 " 7.78 gm. .103 .104 .101

8# temp

Run regular thru ice cold test on Board
21% KOH + 2 gm LiOH

35 deg

60. 1810 2660 | 500 | 410 | [illegible]

35 deg

61- 3125 4250 | 385 | 200 | [illegible]

35 deg

62 2860 4285 | 60 | 75 | [illegible]

35 deg

63 2300 3040 | 1050 | [illegible]
64 1955 2925 | 1155 |

60 See New book Iron Experiment Ra. 1558 6% MgO
15 dumps, each dump followed by a dump of nickel flake.
Run Regular, then ice cold test on board
21% KOH + 2 gm LiOH

---

61. See New book Fe Experiment Ra. 1558 6% MgO
Iron Loaded in 1/8" tubes fine perforations
4 tubes 2 gr. per tube.
48 tamps 14 oz tamp
Run Regular then ice cold test on board 21% KOH + 2 gm LiOH.

---

62 See New book Fe Exp. 1558 Ra. 6% MgO
Iron Loaded in 1/8" tubes fine perforations 46 dumps with flake 1.92 grams per tube
Run Regular then ice cold test on board 21% KOH + 2 gm LiOH

---

63 Fe Exp. 1558 Ra. 10% MgO New Iron
64 Fe_2O_3 then 80 mesh at 800° F
Cooled in H. H replaced by N.

			Top	Mid.	Bot.
64 tamp	63 - 17 tamps	6.60 gr	.110	.109	.098
	64 - 16 "	6.66 "	.110	.109	.098

Run Regular then ice cold test on board. 21% KOH + 2 gm LiOH

35

4995	7.0	1220	~~685~~
96	630	1125	

35

65	1470	2090	685
66	1670	2355	840

4995 Goldschmidt* 887 Iron Jan 2/12
Made by the roller method free from sulphate
21% KOH + 2 gm LiOH Run regular

Reduced by H replaced by N.
No HgO

wt 5,000
4996 " 5,000

65 Fe Exp. 1538 RQ. 6% MgO
66 Iron Loaded in 1/4" tubes
Short length, regular perforations
Nickel flake between dumps
See new Book 65 = 9.27 gm - 86 temp
66 = 9.09 " - 94 "
Tubes ringed and mounted
singly in grids
Run Regular then ice cold test
on Board.
21% KOH + 2 gm LiOH

35°

67	1730	2435	1050
68	1960	2730	999

35°

69	920	1565	700
70	1020	1640	845

4997	1050	1570
4998	1300	1900

67 Fe R.Q. 1538 6% MgO
68 Iron loaded in 1/4" tubes
No flake.
67 = 8.14 gr. - 61 tamps
68 = 8.23 " - 61 "
See this book
Tubes ringed and mounted in regular way
Run Regular thick cold test on board.

21% KOH + 2 gm LiOH

69 Fe R.Q. 1540 10% MgO.
70 New Iron
69 = 7.24 grams = 18 tamps
70 = 7.01 " = 17 "
Tot. Mid Bot.
.104 .095 .086
.106 .102 .087
Run Regular thin ice cold test on Board.

21% KOH + 2 gm LiOH

4997 Fe L. Cell #1
4998 4997 Weight of active material = 17.30 g
4998 Unweighed
Electr. Fe in Hg
Hg squeezed out
To be run regular—

21% KOH + 2 gm LiOH — prev —

71 1070 1710
72 1000 1575

73 1890 2955
74 1800 2715

75 1960 2950

71 R.A. Fe Exp. 1549 10% MgO Mill drop
72

	Top.	Mid.	Bot.
71 = 6.95 gr. – 19 Tamps	.10"	.090"	.080"
72 = 6.515 " – 18 "	.103	.089	.080"

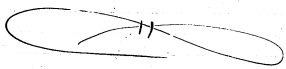
Run Regular thru ice cold on board 21% KOH + 2 gm LiOH

73 R.A. Fe Exp. 1556 10% MgO Mill drop
74 Fe_2O_3 thru 20 Mesh. Reduced & cooled in H. H replaced by N.

	Top.	Mid.	Bot.
73 = 6.67 gr. – 17 tamps	.110"	.105"	.093"
74 = 6.64 " – 18 "	.109	.100	.093

Run Regular thru ice cold on board 21% KOH + 2 gm LiOH

75 R.A. Fe Exp. 1538 6% MgO
6 Horizontal and one vertical strip imbedded in iron.
see new book.
weight of iron about 5.5 gr.
Top = .102" Mid = .102" Bot = .095"
Run Regular thru ice cold on board 21% KOH + 2 gm LiOH



Motion	Reg		35%			
76 R	1850	2870				
77	1765	2870				
78	1260	1860				
79	1170	1795				
4999 –	1700	2740	50	½	H	
			1160	1495	1005	
5000	1000	1710				

76 R.a. Fe. Exp 1557 10% HgO. New brown
77 Fe_2O_3 thru 30 mesh, reduced and cooled in ~~H~~ at 1000° F. ~~H~~ replaced by N.

		Top.	Mid.	Bot.
76 = 8 gr.	27 Temp.	.122	.119	.110
77 = 8.2 "	26 "	.131	.120	.110

Run Regular thru ice cold oil Bath

21% KOH + 2 gm LiOH

78 R.a. Fe Exp ~~1650~~ 1849 6% HgO New brown
79 ~~1444 gr~~

	Top.	Mid.	Bot.
78	.075	.075	.075
79 = 6.01 "	.092	.095	.080

Ice thru Bath

These pockets have spirals of .014 soft iron wire (Ni. plated) running lengthwise in each. Pitch of spiral = 1/16 turns or threads per inch.

21% KOH + 2 gm LiOH

Electrolytic Iron 2.OH #2.

4999 5000. Same as 4997 and 4998

5000. 4999 Same as 4997 and 4998 except smooth pressed 300 Atm Corrugated.

300 Atm all first up in 21% KOH + 2g. LiOH

Hg pressed out in press. Tube made first thin S.P. and Corrugated.

Jan 25, 1912.

					35
			5001		950
			5002		855
			5003		1065
			5004		950
80	1960	2925			
81	2100	3125			
			15 h. O2 at 35°	7 h. O2 at 35°	
			22 h. 35°	60 h. 35°	
82	2110	3190	470	295	
83	2175	3325	370	355	

N

5001 Dup. 2492 Jan 26, 12

5002 " 5,000

5003 " 5,000

5004 " 5,000

21% KOH + 2 gm LiOH Run regular

80 R.A. Fe Exp 1561 10% HgO Neubron
81 Fe_2O_3 thru 80 mesh. Reduced at 800°. Cooled in H. H replaced by N.

			Top	Mid	Bot
80	= 7.47 gr.	= 27 temp	.135	.133	.130
81	= 7.38 "	= 28 "	.141	.135	.127

Run Regular thru ice cold on Board 21% KOH + 2 gm LiOH

82 R.A. Fe Exp 1562 10% HgO Neubron
83 Fe_2O_3 thru 80 mesh. Reduced at 900° F. Cooled in H. H replaced by N.

			Top.	Mid.	Bot.
82	= 7.48 gr.	= 31 temp	.136	.132	.127
83	= 7.48 "	90 "	.131	.130	.129

Run Regular thru ice cold on Board. 21% KOH + 2 gm LiOH

84	865	1300	
85	1140	1725	
86	900	1400	
87	930	1400	

84 R.A.Fe Exp. 1049 6% Hg_2O New Iron
Iron loaded in pocket made
of .005" stock. Top. Mid. Bot.
84 = 6.78 gr = 17 tamps .092 .082 .090
Run Regular then ice Cold
on Board. 21% KOH + 2 gm LiOH

85 R.A.Fe Exp. 1038 6% Hg_2O New Iron
Iron loaded in pocket made
of .005" stock top. Mid. Bot.
85 = 6.47 gr = 16 tamps .095 .091 .086
Run Regular then ice Cold
on Board. 21% KOH + 2 gm LiOH

86 R.A.Fe Exp. 1040 10% Hg_2O New Iron
Iron loaded in pocket made
of .005" Stock top. Mid. Bot.
86 = 7.87 gr = 17 tamp .097 .089 .084
Run Regular then ice cold on
Board. 21% KOH + 2 gm LiOH

87 R.A.Fe 1549 6% Hg_2O New Iron
Iron loaded with strip
down middle of pocket
87 = 5.0 gr. (approx.) TOP MID BOT
.90 .93 .90
Run Regular then ice cold
on Board.
21% KOH + 2 gm LiOH

See loading Exp. Book

Norton	1	1/2	
88	890	1480	
89	1270	1900	

90	1010	1545	
91	960	1545	

92	925	1575	
93	890	1580	

See New Loading Books

88 Regular Iron Lot 1917 Top. MID. BOT.
89 88 = 9.~~875~~ 165 gm. = ~~27~~ 31 tamps (See New Loading Book)
89 = 9.~~700~~ 33 " = ~~26~~ 28 "

Give two (2) forming runs, then turn the cells over to Norton

Exchange condition 21% KOH + 2 gm LiOH

90. R.A. Fe Exp. 1549 6% MgO New Iron Top. MID. BOT.
91 90 = 6.88 gm = 18 tamps (See New Loading Book)
91 = 6.85 " = 15 "

Give two (2) forming runs, then turn the cells over to me, fully charged. 21% KOH + 2 gm LiOH

92 R.A. Fe Exp. 1563 R.A. 10% MgO New Iron
93 Fe_2O_3 thru 80 mesh. Reduced at 1000°F in H. Cooled in H, H replaced by N.

	Top	MID	BOT
92 = 10.11 gm	.110	.114	.110
93 = 10.22 "	.112	.113	.109

92 = 2# tamp 27 tamps
93 = 3# " 30 "

Run Regular then ice cold on Board.

21% KOH + 2 gm LiOH

				15 hr. clay 75° Bin. 350	7 hr. clay 75° Bin. 350
95	1885	2790		1440	1360
				to I.V.	

96 870 1590 | Co
97 900 1600

98 – 575 1/2 878

95 R.A. Fe Exp. 1566 10% MgO New Drum
Fe_2O_3 thru 100 mesh reduced
and cooled in H at 800° F
H replaced by N.
95 = 8.15 gm = 18 Tamps. Top. Mid. Bot.
.117 .118 .112

Run Regular thru ice cold on Board.
21% KOH + 2 gm LiOH

96 R.A. Fe Exp 1064 10% MgO New Drum
97 Fe_2O_3 thru 100 mesh reduced
and cooled in H at 1000° F
H replaced by N. Top Mid Bot
96 = 8.24 gm = 13 tamps. .101 .106 .105
97 = 8.31 " = 13 " .102 .105 .104
Run Regular thru ice cold on
Board 21% KOH + 2 gm LiOH

98 L.O. Fe Exp 5 Electrolytic Iron
Iron ground in mortar until
very fine. Loaded in machine
but without tamping.
98 = 9.24 gm. Top Mid Bot
.100 .104 .100

Run Regular thru ice cold
on Board. 21% KOH + 2 gm LiOH

99	675	1060
100	790	1180

101	835	1275
102	740	1145

103	1160	1845
104	1280	1985

99 L. Ott Fe Exp 5 Electrolytic Iron 8% H_2O
100 Iron ground in mortar with H_2O added after grinding very fine. Loaded in machine without tamping. Top Mid Bot

99 = 9.12 gm = .104 .106 .101
100 = 9.43 " = .113 .110 .104

Run Regular then ice cold on Board 21% KOH + 2 gm LiOH

---

101 L. Ott Fe Exp 5 Elec. Iron 8% H_2O.
102 Iron ground very fine in mortar Loaded regularly in machine

Top Mid Bot
101 = 2 th. tamp = 15 tamps = 10.75 gm .113 .115 .105
102 = 3 " " = 21 " = 11.2 " .123 .121 .113

Run Regular then ice cold on Board 21% KOH + 2 gm LiOH

---

103 R.A. Fe Exp. 1565 10% H_2O Mer Iron
104 Fe_2O_3 thru 100 mesh reduced and cooled in H at 900°F H replaced by N. Top Mid Bot

2" TAMP → 103 = 10.6 gm = 10 tamps .110 .111 .106
1½" " → 104 = 9.76 " = 9 " .110 .110 .106

This Iron is VERY heavy.

Run regular then ice cold on Board.

21% KOH + 2 gm LiOH

105	1195	1800	
106	1290	1950	

35B Spline

107	2900	4300	1735	1499
108	2950	3495	2340	2165
			18 hr. dry	5 hr. 7 hr. dry

105 R.A. Fe Exp. 1567 10% HgO Mix drow
106 Fe_2O_3 thru 100 mesh.
Reduced and cooled in H at 1100° F. H replaced by N.

1½" TAMP

2½" TAMP → 105 = 2.594 gm. = 11 tamp
106 = 8.01 " = 13 "

Top	Mid	Bot
.096	.098	.098
.102	.103	.101

Run regular thru ice cold ow board. 21% KOH + 2 gm LiOH

107 R.A. Fe Exp 1550 10% HgO Mix drow
108 Fe_2O_3 thru 100 mesh, reduced by H. Cooled in H, replaced by N.
This iron feeds with difficulty
These pockets crimped only
Not corrugated.

107 = 1½ lb. tamp 7.775 grams 29 tamps
108 = 2½ " " 8.675 " 24 "

	Top	Mid	Bot
107 =	.118	.130	.128
108 =	.132	.131	.126

Run Regular thru ice cold on Board
21% KOH + 2 gm LiOH

			35	
109	2365	3010	1075	850
110	2570	3595	1700	1565
			to 1V. 15 Lm. Chg.	to 1V. 7 Lm. Chg.

			24	
111	2600	3605	1695	1570
112	1550	2365	1090	1090
			to 1V. 15 Lm. Chg.	to 1V. 7 Lm. Chg.

			35	
113	1325	1975	730	645
			to 1V. 15 Lm. Chg.	to 1V. 7 Lm. Chg.

109 Reg. Storage Battery Iron, Lot 1917
110 Iron loaded in pockets of .005" stock. Crimped only, not corrugated.

109 = 3 lb. tamps = 24 tamps = 9.08 gm
110 = 2 " " = 18 " = 8.98 "

	Top.	Mid.	Bot.
109 =	.126	.135	.130
110 =	.127	.126	.120

Run Regular then ice cold test on Board 21% KOH + 2 gm LiOH

111 Reg. Storage Battery Iron Lot 1917
112 Iron loaded in reg. .003" thick pockets. Crimped only. Not Corrugated Crimped between flat surfaces, not between reg. crimping dies. 23

	Top	Mid	Bot
111 = 2 lb. tamps = 20 tamps = 9.39 gm	.125	.127	.117
112 = 3 " 21½ 2.5 " = 10.46 "	.115	.122	.111

Reg. then cold test

113 S.O.T. Exp #6 Elec. Iron 5% Mg O Iron ground very fine in mortar Put thru 120 mesh.

	Top	Mid	Bot
113 = 2 lb. tamp = 9.01 gm = 20 tamps	.106	.106	.103

Run Regular then Ice Cold on Board.

21% KOH + 2 gm LiOH

	1st Test		35° to 1.V.	
			15 hr. Chg	7 hr. Chg
114	2025	2840	1440	1370
115	2250	3390	1665	1765
116	1950	2850	1330	1250
117	2230	3320	1655	1585
118	2500	3885	1925	1865
119	2100	2970	1445	1365

114 Regular Storage Battery Brand # 1938
115 Pockets Loaded and Cleaned (grouped)
116 at S.B.Co
117

	N°	Weight	Order of Operations
118	114	8.25 gms.	annealed, crimped, corrugated
119	115	8.5 "	annealed, crimped.
	116	7.0 "	crimped, corrugated, annealed.
	117	7.8 "	crimped, annealed.
	118	8.5 "	crimped, annealed.
	119	8.35 "	crimped, annealed, corrugated

The annealing was done in H at the Storage Batt. Co
Crimping done at 150 atm.
Corrugating " " 200 "

		Top	Mid	Bot
calipers	114 =	.112	.112	.109
	115 =	.118	.116	.112
	116 =	.101	.102	.100
	117 =	.111	.110	.105
	118 =	.119	.120	.116
	119 =	.116	.117	.114

Run Regular.
21% KOH + 2 gm LiOH

	IV	1/2	
	10	15	CO

	IV.	1/2
5006	5	10

	30°				
	I.V.	1/2 V.	15 lbs Hg	7 lbs Hg	
5007	1690	2335	870	835	
5008	1620	2270	685	735	
5009	1320	1960	670	510	
5010	1160	1890	340	170	

5005 Goldstein's #917 Fe. March 1, 12
Nitroglycerine made by rolls, and ignited at 1300° F.
21% KOH + 2 gm LiOH Run regular
wt 5.000

5006 Goldstein's Fe #924 Mar 13, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
Pressed in cache

5007 Dally Fe # 5. March 22, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5008 " 5.000

5009 Dally Fe #6 March 22, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5010 " 5.000

	I.V.	.5 V.	15 m. el. (35°)	7 m. el.
5011	1600	2250	750	765
5012	1470	2090	570	510
5013	1290	1850	615	500
5014	1340	1925	755	640
5015	1560	2345	615	550
5016	1710	2440	1020	900
5017	920	1290	385	300
5018	1535	2390	800	600
			Ice cold	
5019	1670	2380	900	
5020	1650	2400	900	

5011 Dalley Dud No 7 March 25-12
21% KOH + 2 gm LiOH run peg
Wt 5.000
5012 " 5.000

5013 Dalley Dr No 8 March 25-12
21% KOH + 2 gm LiOH run peg
Wt 5.000
5014 " 5.000

5015 Dalley Dud 9 Mar 28.12
21% KOH + 2 gm LiOH run peg
Wt 5.000
5116 " 5.000 " "

5017 Dalley Dud No 10 March 28.12
21% KOH + 2 gm LiOH run peg
Wt 5.000
5018 " 5.000 " "

5019 Dalleys Dud No. 11 Apr 1-12
1% KOH + 2 gm LiOH Run peg
Wt 5.000
5020 " 5.000

5021 Dalley Jed No 12 Apr 1-12
21% KOH + 2 gm LiOH Run reg
Wt 5.000
5022 " 5.000

5023 Dalley Jed No 18 Apr 1-12
21% KOH + 2 gm LiOH Run reg
Wt 5.000
5024 " 5.000

5025 Dalley Jed No 14 Apr
21% KOH + 2 gm LiOH
Wt 5.000
5026 " 5.000

5027 Dalley Fe #15 Apr 3, 12
21% KOH / 2 gm LiOH Run regular
wt 5.000
5028 wt 5.000

5029 Dalley Fe #16 Apr 3, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5030 wt 5.000

5031 Dalley Jed No 17 April 5-12
21% KOH + 2 gm LiOH Run reg
Cold 35°
Wt 5.000
5032 785/950 Co 5.000

5033 Dalley Jed No 18 April 5-12
21% KOH + 2 gm LiOH Run reg
35° cold
460 Co
Wt 5.000
5034 575 Co 5.000

Results

	1.V.	.5V.	35° (Recorded)		1V	.5V	35°
5021	1500	2280	850	5031	1835	1955	
5022	1150	1860	120	5032	1660	2130	
5023	1200	1675	285 Rec	5033	1150	1605	
5024	1280	1815	380	5034	1510	2190	
5025	1075	1560	175				
5026	1160	1685	140				
5027	1365	1900	460				
5028	1190	1790	000				
5029	1535	2180	55				
5030	1515	2215	215				

Do not enter all data on the left hand page as you did on previous page.

	1st test		Cool 35°	
5039	1560	2275	885	
36	1370	2025	990	

	1st test		Cool 35°	
5037	1325	1990	295	
38	1370	2035	385	

	1st test		35° cool	
5039	1660	2390	950	
40	1650	2265	950	

	1st test		Cool 35°	
5041	1325	2180	785	
42	1425	2190	990	

5035 Dally Fe #22 Apr 15, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5036 " 5.000

5037 Dally Fe #23 Apr 15, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5038 " 5.000

5039 Dally Fe #24 Apr 15, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5040 " 5.000

5041 Dally Fe #25 Apr 15, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5042 " 5.000

1	1/2	
7445	1045	no cold Ed
8745	1220	

790	1120	no cold Ed.
900	1325	

1st Ed.		Cold
1400	1950	740

		Cold	
1435	2040	800	35 deg
1250	1970	800	

1st Cold		Cold	
1475	2195	830	35 deg
1500	2180	850.	

5043 Dally Fe #26 Apr 18, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5044 " 5.000

5045 Dally Fe #27 Apr. 18, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5046 " 5.000

5047 Dally Fe #28 Apr 23-12
21% KOH + 2 gm LiOH Run regular
wt 5.000
" "

5048 Dally Fe #29 Apr 23-12
1% KOH + 2 gm LiOH Run regular
wt 5.000
5049 " 5.000

5050 Dally Fe #28 Apr 29, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5051 " 5.000

1st	1/2	Cold 35°	
1440	2080	800	35°
1330	1840	730	

1375	2065	680	35°
1325	2175	800	

30	85
25	80

820	990	Notes.	50	1/2
1030	1240		635	850
			935	1035

5	10
5	10

5052 Dally Fe #30 Apr 29, 12
21% KOH + 2 gm LiOH Run regular
wt 5,000
5053 " 5,000

5054 Dally Fe #31 Apr 29, 12
21% KOH + 2 gm LiOH Run regular
wt 5,000
5055 wt 5,000

5056 Anhydrous May 7, 12
Molybdic acid reduced by hydrogen
at 650° 6-8 hrs.
21% KOH + 2 gm LiOH Run regular
wt 5,000
5057 " 5,000

5058 Anhydrous May 7, 12
Cobalt peroxide Co_2O_3
21% KOH + 2 gm LiOH Run regular
wt 5,000
5059 " 5,000

5060 Anhydrous May 7, 12
Manganese dioxide " O_2
21% KOH + 2 gm LiOH Run regular
wt 5,000
5061 " 5,000

0 0
0 5 | Nothing | 0

0 0
0 0 | Nothing | 0

		Good	
1170	1710	674	0
1470	2135	685	

		Good	
1170	1840	690	0
1165	1845	800	

5062 Anhydrous May 7, 12
Chromic oxide reduced by hydrogen
at 1650°F 8 hrs.
21% INCREASE Run regular
wt 5,000
5063 " 5,000

5064 Anhydrous May 7, 12
Neodymium oxide
21% INCREASE Run regular
wt 5,000
5065 " 5,000

120 Regular E.S.B.C.Co Iron Lot 1917
Iron loaded in holes in grid
See New Book.
120 = ~~39~~ 9.75 gms. approx.

5066 Daily Iron # 35 May 8, 12
Run regular
wt 5,000
5067 " 5,000

5068* Daily Iron # 36 May 8, 12
Run regular
wt 5,000
5069 " 5,000

1400	1990	Cold 695	1
1400	2040	590	

1160	1740	Cold 650	1
1130	1740	720	

Nothing

Nothing

1100	1590	Cold 530	1
1420	2075	835	

1075	1715	Cold 690	1
820	1465	470	

5070 Dally Run #37 May 8, 12
Run regular
wt 5,000
5071 " 5,000

5072 Dally Run #38 May 8, 12
Run regular
wt 5,000
5073 " 5,000

5074 #39 Arsenious May 8, 12
Tungstic acid reduced in hydrogen at
1450-60° F Run regular
wt 5,000
5075 " 5,000

5076 #40 Manganic Oxide May 8, 12
reduced in hydrogen at 1450-60° F
Run regular
wt 5,000
5077 " 5,000

5078 Dally Run #41 May 8, 12
Run regular
wt 5,000
5079 " 5,000

5080 Dally Run #42 May 8, 12
Run regular
wt 5,000
5081 " 5,000

5082 Dally Iron #43 May 14, 12
21% KOH / 2 gm LiOH Run regular
wt 5.000
5083 " 5.000

5084 Dally Iron #44 May 14, 12
21% KOH / 2 gm LiOH Run regular
wt 5.000
5085 " 5.000

5086 Dally Iron #45 May 14, 12
21% KOH / 2 gm LiOH Run regular
wt 5.000
5087 " 5.000

5088 Dally Iron #46 May 14, 12
21% KOH / 2 gm LiOH Run regular
wt 5.000
5089 " 5.000

5090 Dally Iron #47 May 14, 12
21% KOH / 2 gm LiOH Run regular
wt 5.000
5091 " 5.000

5092 Dally Iron #48 May 14, 12
21% KOH / 2 gm LiOH Run regular
wt 5.000
5093 " 5.000

1V	1/2	
710 -	925	
860	1070	

690	845	
470	1330	

1335	1720	
1320	1790	

		Reduced 32	various bad
1745	2675	1110	
1930	2900	995	

1250	1690	
1225	1565	

5094 Dally Iron #49 May 17, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5095 " 5.000

5096 Dally Iron #50 May 17, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5097 " 5.000

5098 Dally Iron #51 May 22, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5099 " 5.000

5100 Dally Iron #52 May 22, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5101 " 5.000

5102 Dally Iron #53 May 28, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5103 " 5.000

810 1035
1120 1200

65 80
60 75

1060 1185
1190 1525

1400 2168
1580 2335

Cold 32°
880
660

Varnish Cooling

5104 Dally Iron #54 May 28, 12
21% KOH + 2 gm LiOH Run regular
wt 5,000
5105 " 5,000

5106 Dally Iron #55 May 28, 12
21% KOH + 2 gm LiOH Run regular
wt 5,000
5107 " 5,000

5108 Dally Iron #56 May 28, 12
21% KOH + 2 gm LiOH Run regular
wt 5,000
5109 " 5,000

5110 Helfin #1581 May 28, 12
21% KOH + 2 gm LiOH Run regular
wt 5,000
5111 " 5,000
150 grams red Iron no 1208 loaded by wt 12 was was screened thru 20 mesh and reduced no Helfin

time	Temp	Time	Temp	Time	Temp
9	700°	12.0	1050	4.00	1060
			1020	4.30	1060
10	830	1.00	1080		off
11	960	2.00	1180		

The pot allowed to cool over night then air after passing thru 40 grams Pyrogallic in 1 Litre 33% KOH and stirring well over

	1 vol	1/2
5112	30	85
5113	30	85

5114	985	1460
5115	1365	1990

Cold 32°

		1/2			
5116	1770	2595	1060		
5117	1865	2825	1175		

iron sulphate was passed through pot for 2 hrs. pot the open Iron was good gray
Mixed with Hg_2O by grinding in motor until screenings gone
7 through 188 M 57.7 o/o
" 100 M 32.7 o/o
on " " 9.6 o/o
Data S.W. of red 12
" " after Reducing 11.2
" " " mixing Hg_2O 10.9

5112 Dally Iron #57 June 9, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5113 " 5.000

5114 Dally Iron #58 June 3, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5115 " 5.000

5116 Dally Iron #59 June 10, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5117 wt 5.000

		½		Cold 35°
5118	1875	2680		1300
5119	1845	2770		1125
5120	830	1050		
5121	875	1255		
				Cold 32°
5122	1600	2345		490
5123	1700	2610		530
				Cold 35°
5124	1550	2330		90
5125	1740	2635		140
5126	190	230		
5127	25	40		

5118 Dally Iron #60 June 10, 12
21% KOH + 2 gm LiOH Run regular
wt 5,000
5119 " 5,000

5120 Dally Iron #61 June 10, 12
21% KOH + 2 gm LiOH Run regular
wt 5,000
5121 " 5,000 (not corrugated)

5122 Dally Iron #62 June 10, 12
21% KOH + 2 gm LiOH Run regular
wt 5,000
5123 " 5,000

5124 Dally Iron #63 June 10, 12
21% KOH + 2 gm LiOH Run regular
wt 5,000
5125 " 5,000

5126 Dally Iron #64 June 10, 12
21% KOH + 2 gm LiOH Run regular
wt 5,000
5127 " 5,000
(not corrugated)

1	1/2	Cold Coal
1600	2375	975
1600	2465	895
1740	2650	Cold Coal
1600	2360	770
		590
1190	1585	
860	1090	
1600	2460	Cold
1530	2350	445
		370
1620	2490	Cold
1650	2560	355
		335

5128 Dally Iron #65 June 12, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5129 " 5.000

5130 Dally Iron #66 June 13, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5131 " 5.000

5132 Dally Iron #67 June 13, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5133 wt 5.000
(Not corrugated)

5134 Dally Iron #68 June 13, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5135 " 5.000

5136 Dally Iron #69 June 13, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5137 " 5.000

850	1235		
1190	1720		
1885	2815	C.E.C.	
1785	2650	785	
		595	
1810	2725	C.E.C.	
1890	2775	270	
		390	
1555	2215		
1525	2255		
1255	1935		
1255	1905		

5138 Dally Iron #70 June 13, 12
21% KOH, 2 gm LiOH Run regular
wt 5.000
5139 " 5.000 Not corrugated

5140 Dally Iron #71 June 17, 12
21% KOH, 2 gm LiOH Run regular
wt 5.000
5141 " 5.000

5142 Dally Iron #72 June 17, 12
21% KOH, 2 gm LiOH Run regular
wt 5.000
5143 " 5.000

5144 Dally Iron #73 June 17, 12
21% KOH, 2 gm LiOH Run regular
wt 5.000
5145 " 5.000
(Not corrugated)

5146 Dally Iron #74 June 17, 12
21% KOH, 2 gm LiOH Run regular
wt 5.000
5147 " 5.000

1240	1925	
1237	1820	
1490	2150	
1275	1945	
975	1215	
1565	2100	
		Cold 35°
1690	2495	645
1565	2300	665
1500	2250	
1590	2285	

5148 Daily Iron #75 June 17, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5149 " 5.000

5150 Daily Iron #76 June 17, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5151 wt 5.000 (Not corrugated).

5152 Daily Iron #64 June 20, 12
21% KOH + 2 gm LiOH Run regular
wt 7.000
5153 " 7.000
Duplicate of 5126-27 (Not corrugated)

5154 Daily Iron #77 June 20, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5155 " 5.000

5156 Daily Iron #78 June 20, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5157 " 5.000

1690	2465	Cold 580
1595	2300	665
1260	1740	
1275	1670	
1170	1700	
1155	1655	
1445	2380	Cold 740
1700	2315	665
1490	2020	
1350	1845	

5158 Dally Iron # 79 June 20, 12
21% KOH + 2 gm LiOH Run regular
wt 5,000
5159 " 5,000
(Not corrugated)

5160 Dally Iron # 80 June 24, 2
21% KOH + 2 gm LiOH Run regular
wt 5,000
5161 " 5,000

5162 Dally Iron # 81 June 24, 12
21% KOH + 2 gm LiOH Run regular
wt 5,000
5163 " 5,000

5164 Dally Iron # 82 June 24, 12
21% KOH + 2 gm LiOH Run regular
wt 5,000
5165 " 5,000
(Not corrugated)

5166 Dally Iron # 83 June 24, 12
wt 5,000
5167 " 5,000
21% KOH + 2 gm LiOH Run regular

1390 1920
1335 1770

1440 2300 (Cold) 150
1670 2255 155

1320 1900
1095 1385

1305 1865
1400 1980

1600 2260
1560 2180

5168 Dally Iron #84 June 24, 12
21% KOH ; 2 gm LiOH Run regular
wt 5.000
5169 " 5.000

5170 Dally Iron #85 June 24, 12
21% KOH ; 2 gm LiOH Run regular
wt 5.000
5171 " 5.000
(Not corrugated)

5172 Dally Iron #86 June 29, 12
21% KOH ; 2 gm LiOH Run regular
wt 5.000
5173 " 5.000

5174 Dally Iron #87 June 29, 12
21% KOH ; 2 gm LiOH Run regular
wt 5.000
5175 " 5.000

5176 Dally Iron #88 June 29, 12
21% KOH ; 2 gm LiOH Run regular
wt 5.000
5177 " 5.000
[Not corrugated]

5178-9	1450 1465	2075 2140	
1310 1400	1425 1925		
			35 Cal'd
5182-3	1775 1800	2512 2500	600 566
1200 1280	1695 1715		
1190 1185	1460 1630		

5178 Dally Run #89 June 29, 12
21% KOH + 2 gm LiOH Run regular
wt 5,000
5179 " 5,000

5180 Dally Run #90 June 29, 12
21% KOH + 2 gm LiOH Run regular
wt 5,000
5181 " 5,000

5182 Dally Run #91 June 29, 12
21% KOH + 2 gm LiOH Run regular
wt 5,000
5183 " 5,000
(Not corrugated)

5184 Dally Run #92 July 8, 12
21% KOH + 2 gm LiOH Run regular
wt 5,000
5185 " 5,000

5186 Dally Run #93 July 8, 12
21% KOH + 2 gm LiOH Run regular
wt 5,000
5187 " 5,000

~~[illegible]~~

1450 1895
1460 1940

1295 1765
1285 1775

1545 2175
1465 2065

1540 2035
1450 1930

1490 2075
1490 2070

1760 2575 Run cond
1695 2400

5188 Daily Run #94 July 8, 12
21% KOH + 2 gm LiOH Run regulan
wt 5,000
5189 wt 5,000 (not corrugated)

5190 Daily Run #95 July 8, 12
21% KOH + 2 gm LiOH Run regula
wt 5,000
5191 " 5,000

5192 Daily Run #96 July 8, 12
21% KOH + 2 gm LiOH Run regulan
wt 5,000
5193 " 5,000

5194 Daily Run #97 July 8, 1
21% KOH + 2 gm LiOH Run regula
wt 5,000
5195 " 5,000 (not corrugated)

5196 Daily Run #98 July 8, 12
21% KOH + 2 gm LiOH Run regula
wt 5,000
5197 " 5,000

5198 Daily Run #99 July 8
21% KOH + 2 gm LiOH Run regulan
wt 5,000
5199 wt 5,000

1300	1760	
1535	2070	
		Cold 35
1750	2475	415
1700	2415	330
		Cold 35
1895	2790	230
1770	2600	180
650	1665	
65	70	

5200 Dally Iron #100 July 8, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5201 " 5.000
(Not corrugated)

5202 Dally Iron #101 July 11, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5203 " 5.000

5204 Dally Iron #102 July 11, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5205 " 5.000

5206 Dally Iron #103 July 11, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5207 " 5.000
(Not corrugated)

5208 Dally Iron #104 July 15, 12
21% KOH + 2 gm LiOH Run reg
wt 5.000
5209 " 5.000

5210 Selby Iron # 105 July 15, 1912
21% KOH + 2 gm LiOH
Wt 5.000
5211 " " 5.000

5212 Selby Iron # 106 July 15, 1912
21% KOH + 2 gm LiOH
Wt 5.000
5213 " 5.000
(Not corrugated)

5214 Selby Iron # 101 July 20, 12
21% KOH + 2 gm LiOH
Wt 5.000
5.000 g.

5219 Selby Iron # 103 July 20-12
21% KOH + 2 gm LiOH
wt 5.000
defs. (7142-5206-07.)
5215 " 5.000
(Not corrugated)

5210 Selby Iron # 104 July, 2012
wt 5.000
defs. (Nos 5208-09)
5217 " 5.000
21% KOH + 2 gm LiOH

Cold Tool.
1075 1435
1635 2250

Cold
1700 2465
1625 2240

965 1245 Calcd
1965 2535

1900 2625 Calcd
1315 1935

1020 1500
1105 1630

1085 1685
950 1360

965 1350
960 1295

5218 Nally Iron #105 July 20-12
21% KOH + 2 gm LiOH running.
wt 5.000
dupl. (Nos 5210-11)

5219 " 5.000

5220 Nally Iron #106 July 20-12
21% KOH + 2 gm LiOH running.
wt 5.000

5221 " 5.000 Not Corrugated

5222 Nally Iron #107 July 20-12
21% KOH + 2 gm LiOH running.

wt 5.000

5223 wt 5.000

5224 Nally Iron #108 July 20-12
KOH + 2 gm LiOH running.

wt 5.000

5225 " 5.000

5226 Nally Iron #109 July 20-12
wt 5.000

5227 wt 5.000 KOH + 2 gm LiOH
(Not Corrugated)

Cal'd

1925	2870
2035	3020
1745	2550
1700	2505
1700	2525
1660	2450

1435	2105
1565	2290

1600	2365
1600	2400

1380	1925
1425	1990

1585	2195
1595	2170

1865	2740
1250	1800

5228 Nally Iron #102 Aug 3 342
21% KOH + 2 gm LiOH
wt 5.000 Long Endurance
5229 " " "
5230 " " Test
5231 " " By order of
5232 " " Mr. Edison
5233 " "

5234 Nally Iron # 110 Aug 3-12
21% KOH + 2 gm LiOH unreg.
wt 5.000
5235 " 5.000

5236 Nally Iron # 111 Aug 3-12
21% KOH + 2 gm LiOH unreg.
wt 5.000
5237 " 5.000

5238 Nally Iron # 112 Aug 3-12
21% KOH + 2 gm LiOH unreg.
wt 5.000
5239 " 5.000 (not corrugated)

5240 Nally Iron # 113 Aug 6-12
21% KOH + 2 gm LiOH unreg.
wt 5.000
5241 " 5.000

5242 Nally Iron # 114 Aug 6-12
21% KOH + 2 gm LiOH unreg.
wt 5.000
5243 " 5.000

550 735
675 890

1500 2645 Cold
1770 2535

1930 2590 Cold
1950 2665

840 1195 Co
210 250

1125 1585 Co
1250 1800

1325 1940 Co
1260 1849

5244 Dally Iron # 115 Aug 15-12
21% KOH + 2 gm LiOH running
wt 5.000
5245 " 5.000 not corrugated

5246 Dally Iron # 116 Aug 15, 12
21% KOH + 2 gm LiOH Rim req
wt 5.000
5247 " 5.000

5248 Dally Iron # 117 Aug 15, 12
21% KOH + 2 gm LiOH Rim req
wt 5.000
5249 " 5.000

5250 Dally Iron # 118 Aug 15, 12
21% KOH + 2 gm LiOH Rim req
wt 5.000
5251 " 5.000
(not corrugated)

5252 Dally Iron # 119 Aug 15, 12
21% KOH + 2 gm LiOH Rim req
wt 5.000
5253 " 5.000

5254 Dally Iron # 120 Aug 15, 12
21% KOH + 2 gm LiOH Rim req
wt 5.000
5255 " 5.000

445 600 | G
850 1125

1125 1615 | G
1385 2000

1530 2300 | Cold Dest
1700 2555

845 1120 | G
545 765

1560 2200 Run Cold
1600 2265

5256 Dally Iron #121 Aug 15, 12
21% KOH + 2 gm LiOH Run neg
wt 5.000
5257 " 5.000
(not corrugated)

5258 Dally Iron #122 Aug 15, 12
21% KOH + 2 gm LiOH Run neg
wt 5.000
5259 " 5.000

5260 Dally Iron #123 Aug 15, 12
21% KOH + 2 gm LiOH Run neg
wt 5.000
5261 " 5.000

5262 Dally Iron #124 Aug 15, 12
21% KOH + 2 gm LiOH Run neg
wt 5.000
5263 " 5.000
(not corrugated)

5264 Dally Iron #125 Aug 15, 12
21% KOH + 2 gm LiOH Run neg
wt 7.000
5265 " 7.000

Rods

1630 2410
2000 3015

185
175

1255 1770
0 0

1290 1890
1575 2600

25
35

1685 2455 Rod test
1690 2475

5266 Daily Iron #126 Aug 15, 12
21% KOH + 2 gm LiOH Run reg
wt 7.000
5267 " 7.000

5268 Daily Iron #127 Aug 15, 12
21% KOH + 2 gm LiOH Run reg
wt 7.000
5269 " 7.000 Not congeated

5270 Daily Iron #128 Aug 15, 12
21% KOH + 2 gm LiOH Run reg
wt 5.000
5271 " 5.000

5272 Daily Iron #129 Aug 15, 12
21% KOH + 2 gm LiOH Run reg
wt 5.000
5273 " 5.000

5274 Daily Iron #130 Aug 15, 12
21% KOH + 2 gm LiOH Run reg
wt 5.000
5275 " 5.000 (Not congeated)

5276 Daily Iron #131 Aug 15, 12
21% KOH + 2 gm LiOH Run reg
wt 5.000
5277 " 5.000

1650 2450 Cold
1458 2190

1485 2080
920 960

0 0 B 2nd Lot hand tested
975 1265 830
1600

1975 2970 Cold
1580 2160 2nd Lot B hand tested
1700
1950

355 445 2nd Lot B - hand tested
20 445 550
1145

5278 Dally Iron #132 Aug 15, 12
21% KOH + 2 gm LiOH Run reg
wt 5.000
5279 " 5.000

5280 Dally Iron #133 Aug 15, 12
21% KOH + 2 gm LiOH Run reg
wt 5.000
5281 " 5.000 (Not corrugated)

5282 Dally Iron #134 Sept 5, 12
21% KOH + 2 gm LiOH Run reg
wt 5.000
5283 " 5.000

5284 Dally Iron #135 Sept 5, 12
21% KOH + 2 gm LiOH Run reg
wt 5.000
5285 " 5.000

5286 Dally Iron #136 Sept 5, 12
21% KOH + 2 gm LiOH Run reg
wt 5.000
5287 " 5.000
Not corrugated

5288 Daily Inv. 137 Sept. 5, 12
21% KOH + 2 gm LiOH Chinney
wt 5,000
5289 " 5,000

See Book on Hand for Loading Explosivity

121 Regular E.S.B.Co Iron #2112
122 Loaded by hand
121 = 0 gm FeO
122 = " "
Run Regular
21% KOH + 2 gm LiOH

123 Regular E.S.B.Co Iron Mix #2112
124 Loaded by hand
123 = 0 gm FeO
124 = " "
Run Regular
21% KOH + 2 gm LiOH

125 Regular E.S.B.Co Iron #2112
126 Loaded by hand
125 = 0 gm FeO
126 = " "
Run Regular
21% KOH + 2 gm LiOH

1800 2645 Run cartridge
1770 2535

2030 2800 Run Caddle
2200 3000 450 Westinghouse Over Hot
1350 - 1 C

See Book on Next from Loading Experiments

127 Regular E.S.B.Co Iron # 2112
128 Pockets Loaded by Hand
127 - 5 gm TEO
128 - " "
Run Regular
21% KOH + 2 gm LiOH

129 Regular E.S.B.Co Iron #2112
130 Pockets Loaded by Hand
129 - 5 gm TEO
130 - " "
Run Regular
21% KOH + 2 gm LiOH

131 Regular E.S.B Co Iron # 2112
132 Loaded by Hand
131 - 5 gm. TEO
132 - " "
Run Regular
21% KOH + 2 gm LiOH

133 Regular E.S.B.Co Iron #2112
134 Hand Loaded
133 - 5 gm TEO
134 - " "
Run Regular
21% KOH + 2 gm LiOH

1675 2475 Run Cold Lost
1680 2480 Run 5#
1100 400
1195 36%
Co

There is some mechanical reason for Iron going bad Cold

Cold
255
325
Co

Cold
295
435
380
390
290
Co

435
340
380
400
420
Co.

See Loading Book

135 Regular E.S.B.Co Iron #2112
136 Hand Loaded
135 = 5gm - FeO
136 " " "
Run Regular
21% KOH + 2 gm LiOH

137 Regular E.S.B.Co Iron #2112
138 Hand Loaded
137 = 5gm FeO
138 = " "
Run Regular
21% KOH + 2 gm LiOH

See New Iron Loading & Experiments Book

139 Regular E.S.B.Co Iron #2112
140 Hand Loaded
141 139 = 5gm. FeO
142 140 = " "
143 141 = " "
144 142 = " "
145 143 = " "
146 144 = " "
147 145 = " "
148 146 = " "
147 = " "
148 = " "
Run Regular
21% KOH + 2 gm LiOH

1395
1370

240
195

149 Regular E.S.B.Co Mix #2112
150 Hand Loaded
149 = 5gm FeO
150 = " "
Run Regular Then ice cold on Board
21% KOH + 2 gm LiOH

151 Iron filings thru 100 mesh
152 151 = 11.20 gms.
152 = 12.98 "
Run regular then ice cold on Board
21% KOH + 2 gm LiOH

5290 Daily Iron #138 Sept 5, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000-?
5291 " 5.000-?

5292 Daily Iron #139 Sept 5, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5293 wt 5.000
Not corrugated

1600 2360 1700 2525	Coldcast	5294 Dally Drm # 140 Sept 10, 12 21% KOH + 2 gm LiOH Run regular wt 5,000 5295 " 5,000
1700 2540 1635 2370	Coldcast	5296 Dally Drm # 141 Sept 10, 12 21% KOH + 2 gm LiOH Run regular wt 5,000 5297 " 5,000
1675 2460 1350 1925		5298 Dally Drm # 142 Sept 10, 12 21% KOH + 2 gm LiOH Run regular wt 5,000 5299 " 5,000 (Not corrugated)
1125 1600 1140 1565		5300 Dally Drm # 143 Sept 10, 12 21% KOH + 2 gm LiOH Run regular wt 5,000 5301 " 5,000
1115 1620 1240 1910		5302 Dally Drm # 144 Sept 10, 12 21% KOH + 2 gm LiOH Run regular wt 5,000 5303 " 5,000
1130 1555 1100 1505		5304 Dally Drm # 145 Sept 10, 12 21% KOH + 2 gm LiOH Run regular wt 5,000 5305 " 5,000 (Not corrugated)

1660 2365
1880 2765

Cold test

1765 2545
1665 2445

Cold test

1485 2100
1600 2280

1565 2255
1590 2285

1525 2195
1560 2265

5306 Daily Iron #146 Sept 11, 12
21% KOH + 2 gm LiOH Run regular
wt 4.828
5307 " 5.190
Loaded by machine

5308 Daily Iron #147 Sept 11, 12
21% KOH + 2 gm LiOH Run regular
wt 5.272
5309 " 5.302
Loaded by machine.

5310 Daily Iron #148 Sept 11, 12
21% KOH + 2 gm LiOH Run regular
wt 4.655
5311 " 4.710
Loaded by machine (Not corrugated)

5312 Daily Iron #149 Sept 11, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5313 " 5.000
Loaded by hand

5314 Daily Iron #150 Sept 11, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5315 " 5.000 Loaded by hand

1535 2180
1485 2095

5316 Dally Iron #151 Sept 11, 12
21% KOH + 2 gm LiOH Run regular
wt 5,000
5317 " 5,000
Loaded by hand (Not conjugated)

5318 Dally Iron #146 Sept 17, 12
21% KOH + 2 gm LiOH Run regular
wt 5,000
5319 " 5,000
Dup of 5306-07 only loaded by hand.

5320 Dally Iron #147 Sept 17, 12
21% KOH + 2 gm LiOH Run regular
wt 5,000
5321 " 5,000
Dup of 5308-09 only loaded by hand.

5322 Dally Iron #148 Sept 17, 12
21% KOH + 2 gm LiOH Run regular
wt 5,000
5323 " 5,000
Dup of 5310-11 only loaded by hand.

5324 Dally Iron #152 Sept , 12
21% KOH + 2 gm LiOH Run regular
wt 5,000
5325 " 5,000 loaded by hand.

5326 Dally Iron #153 Sept 17, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5327 " 5.000
Loaded by hand.

5328 Dally Iron #154 Sept 17, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5329 " 5.000
(Not corrugated), Loaded by hand.

5330 Dally Iron #155 Sept 17, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5331 " 5.000
, Loaded by hand.

5332 Dally Iron #156 Sept 17, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5333 " 5.000
, Loaded by hand.

5334 Dally Iron #157 Sept 17, 12.
21% KOH + 2 gm LiOH Run regular
wt 5.000
5335 " 5.000
(Not corrugated) Loaded by hand.

5336 Dally Iron #158 Sept 17, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5337 " 5.000
Loaded by hand.

5338 Dally Iron #159 Sept 17, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5339 " 5.000
Loaded by hand.

5340 Dally Iron #160 Sept 17, 12
21% KOH + 2 gm LiOH Run regular
wt 5.000
5341 " 5.000
(Not corrugated), Loaded by hand

5342 Hunter Fu #2283 Nov 20, 12
Run reg
wt 5.000
5343 " 5.000
Not loaded.

III

7-11-06

Cold Tubes

Cell	1	2	3	5	4	
2	330	350	359	370	327	after 827 Hot Runs
3	480	497	498	515	455	
4	476	490	495	491	417	
6	432	442	447	448	407	
8	400	412	415	425	380	
12	387	427	445	472	406	after 800 Hot Runs
28	400	417	425	437	395	after 750 Hot Runs
35	277	297	312	322	290	
83	365	385	392	400	365	after 700 Hot Runs
154	475	487	492	502	455	
160	435	462	467	480	425	
218	415	475	487	497	447	after 650 Hot Runs
231	515	550	560	585	512	after 500 Hot Runs,
232	440	467	477	490	432	
233	567	583	590	602	540	
234	650	672	678	695	632	after 150 Cold Runs
235	410	422	427	435	395	" 500 Hot Runs
236	432	450	450	462	417	" 650 Total Runs,
273	660	697	706	917	657	after 550 Hot Runs.
282	470	520	540	552	475	
287	385	417	432	450	380	
288	342	227	387	387	340	
305	201	225	240	253	245	
306	580	620	627	630	550	
307	222	247	262	287	277	
Cell	July 11	12	13	15	14	

#2 Split a little.
12 Seam open a little.
218 Seam started to open.
231 " " " "
232 " " " "
234 Started to split a little
235 " " " " "
236 " " " " "
273 Split.
282 "

#287 Started to split top & bottom
305 Badly split.
307 Very badly split.
160 Started to split.

E. H. H. Jr.

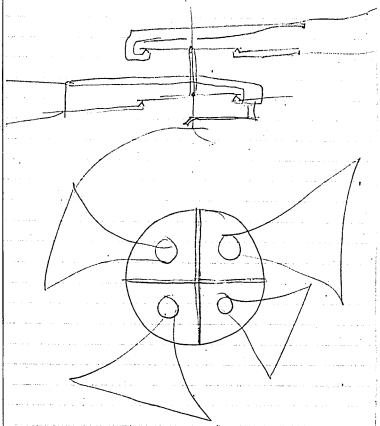
[ITEM FOUND IN BOOK]

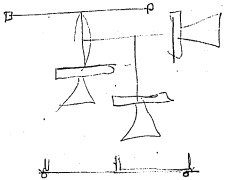
Notebook, N-10-09-23

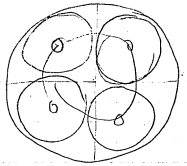
This notebook is a continuation of N-10-04-10. It was used during September 1910. All entries are by Edison. It is the third of three books that contain notes and drawings regarding phonograph recording apparatus. Several entries detail the use of motograph and telephone technology as means of improving recording fidelity. At the end of the book are drawings of phonograph cabinet designs. The front cover is marked "Phonograph Sept. 1910." The pages are unnumbered. Approximately 50 pages have been used.

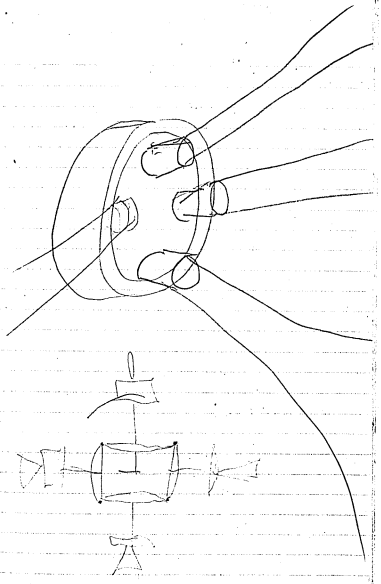
Sept 23 1910 —

Phono-Recorder

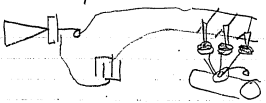






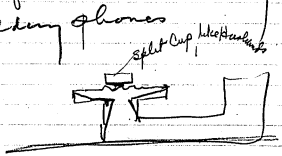


Sept 23 1910



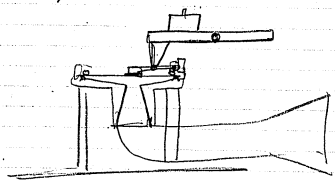
Try Multiple & in series -

also holding 3. Bells in front of funnel with small funnels pointing toward phone funnel + have switches to each so see of loudness increases by adding phones



Try Alternate granules - Magnitude - High Res varieties of Tungsten Tungsten & other things -

Sept 23 1910



Silver fuses Lampblack.

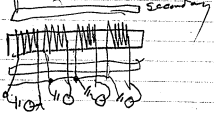
2 of these –

Also use 2 Reg Telephones

Multiple & series with

funnels –

possibly if induction coil used



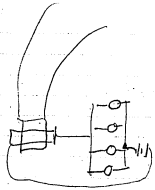
$\frac{2|96}{48}$

8X8

12X8

$$\begin{array}{r} 15 \\ 12 \\ \hline 75 \\ 15 \\ \hline 225 \end{array}$$

48 times

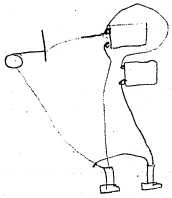


~~no sound Res 10000 ohm.~~
~~2500 Each — current. ~~2 milamp~~~~
~~5000 Milamp total~~
~~1250 " in each~~
~~Disturbance, 10 Milamp in.l.~~
~~Forty 1 in Current. 40 ohm 2 volts.~~
~~50~~

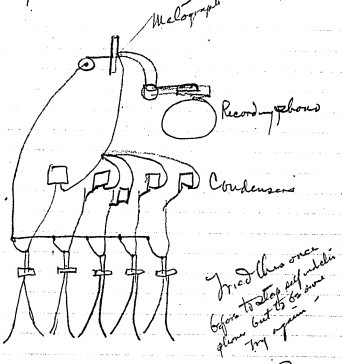
Res of 1 trans. 10 ohms 1 Volt —
100 milamp — disturbance, 1 ohm —
or 10% 5% up + down Variation
10 milamp
2 Multiple 5 ohm 1 V
200 Milamp

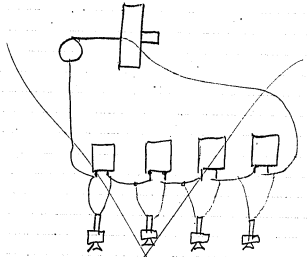
With 100 Telephone transmitters and 1 amp. Current, 1 Volt. Total res. should be 1 ohm or 40 ohm per phone

10% in one phone, would not be noticed



Sept 23 1910





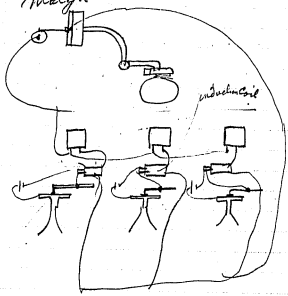
Think this is way I tried it before
but I don't look right.
No it was as on page book

Sept 23 1910

found several receivers &
test them out for sensitiveness
Hans Carpenter secure them
so can put funnels on &
find out fix mouthpieces
so funnels can be attached
see if we have any phonoplex
Sounders on sticks if so
can put them

Sept 23 1910

Metgh –



Carbon & Iron Cutting &
Photographed at
Husbands Frankville

Make some mch rings of pressed precipitates for recording. ZnO once tried Cuts Easy – Try Cmb Stronlein

Organic precip –

Sulphide antimony precipes 150 at 15 a work like but far harder. Tungsten Tin Tungsten & Speed – Cy hard

Pressed Salts of Organic acid + 6 mos hung proves good.

Goldstein Make some Fluoride Ca very fine ~~Will~~ make cylinder several pressures

Note book 1902 say when wet with KOH not very long then wet with water mmy got loud – Try water first of nothing use weak KOH,

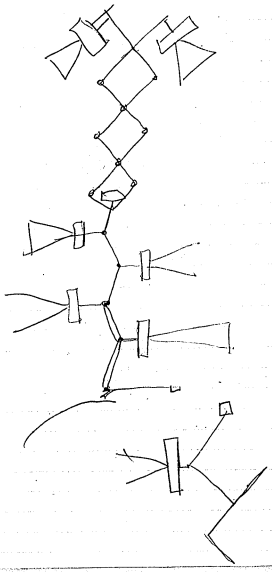
~~Powder up Tungstate Ka Na Very fine~~

Try Tungstic acid with weak KOH,

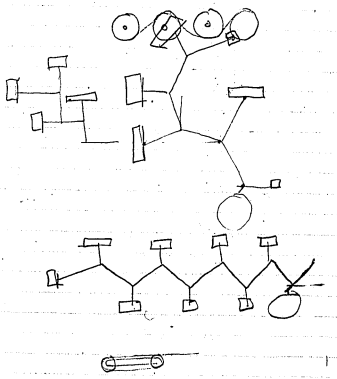
1902 book say WO_3 need with KOH to dissolve but of all out very sensitive to water

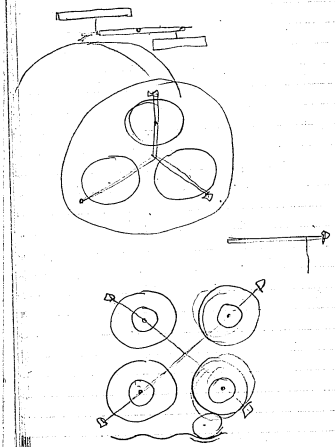
It works with H_2SO_4 but not good like KOH. ½ Load of $SrCO_3$

Try Molybdic acid,



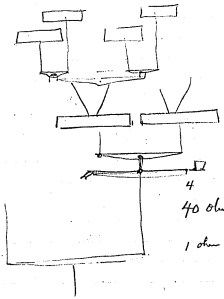
Try Bismuth Oxalate, diff process
do Sr Oxalate "





Sept 23 1910

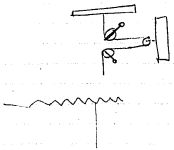
Think only way to play Music at distance from horn in a room & get rid of Down & well sound or Echoes is to Cover the Entire room 3" Thick with small sound bags in Cotton cloth & held in screen mesh say 1/4" mesh then the Musical Talking will be free of it possibly Mattrics 9" thick packed hard would do it



4

40 ohm 20 –

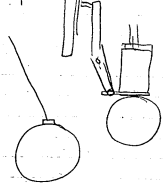
1 ohm 1/2 ohm



40 ohm Coil – 40 ohm res 40 volts
1 amp – power reduced 1/2 to 20 ohm
2 amp – 1 amp on 40 turns –

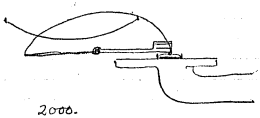
4 amp 40. Coils Multiple
one coil stand 200 milamp – varies
10 milamps

40 Coil Multiple – stand
8000 milamp – varies 400 milamp
but



1000 ft sec

500 Vib Sec



2000.

.10- Reduced to 1 ohm

.20- 200 ohms 10 ohm

2000 ohms - 10 ohms unnecessary

$\frac{1}{200}$ th - in series - $\frac{1}{19}$ 10 1 50

~~200~~ In Multiple $\frac{1}{2}$ ohm

200 20 100 .50

12/540 (45 12)480(

6

90 50

80 45

70

100	1st	6 1/2 -	600 -	1 month	50
90	2nd	"	540 -	2 "	45
80	3	"	480	3	40
70	4	"	420	4	35
60	5	"	360	5	30
50	6	"	300	6	25
40	7		240	7	20
30	8		180	8	15
20	9		120	9	10
10	10		60	10	5
					280

280.

1.320 000 - 4000 - 2 000 000

600

1.920

1 10

600 - 14 00

56 -

54

110

110

2

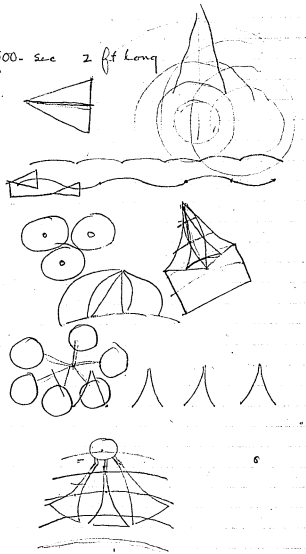
2 8

1 1 3

1.3

56 1 5

500- see 2 ft Long



576-

16000) 2550000 (16
1600000
950000
96

82
74
8

9000
7500
8000
19500
16000
2550

16

160
150
88
160
24
12
4
24

58
16
74

90
160
540
280
820

40
70
280

95
36000

80
8

7

21
7
28

160
28
128
120
3
44

160
240
280
120
348
4

16000
3200

80

165

30) 150 (5

5) 200
40

40

1080

1180

150) 1080 (7.2
1050
30

200
1440

55
3

55
300
275

1340
1080
26

1440

260

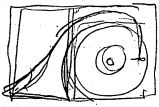
2750
2600
1650
1500
357
357

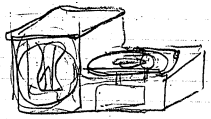
2750
1100
550
5

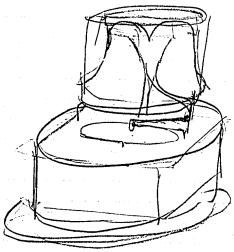
300

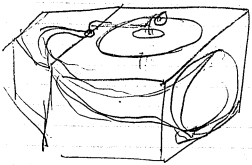
16
8
128
300
428

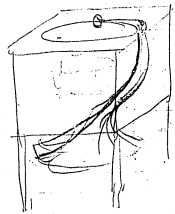
Nº 4

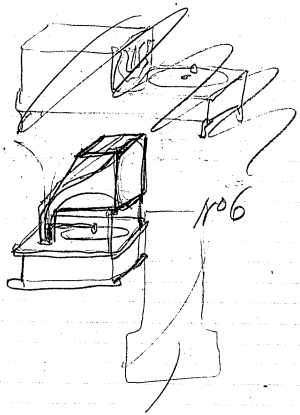


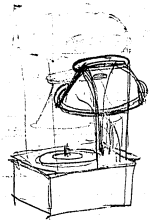


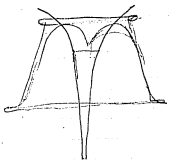


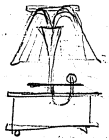


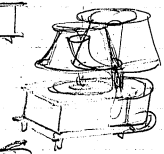


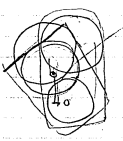

nº6



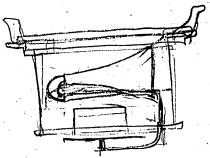




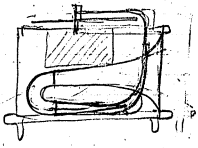



See next page
numbered X1
40

3 at 35 105
3 at 50 150
45
65
4 3
150
4
3
3
85
260
50
170
557
260
300
50
300
655
1970



No 5

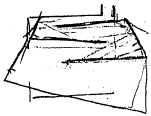


Simmons

No 6
14
Cast iron

107

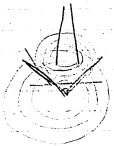
Pro 7 Make wheelie pins



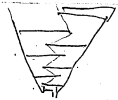
60 -

14
64 -
84

1550
840
710



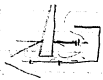
710 lbs -
300



710 0000
300
7100,00

300
30
9000

2000) 7 100 000 (3555
6000
1 100 0
1 0 000
1 0 000
1 0



30) 3555 (118 -
30
55
30
30

30) 7110 (236 -
60
110
90
20

236 - 3555

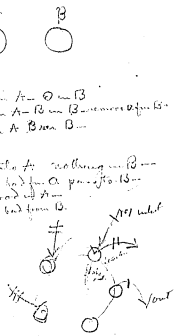
Notebook, N-07-02-00

This undated notebook was probably used during 1910. All entries are by Edison. Most of the book contains notes, drawings, and calculations regarding storage battery experiments. Included are logs of cell endurance tests and what appear to be preliminary plans for the manufacturing process. There are also scattered phonograph drawings. The front cover is labeled "1st Few pages Important data Bismuth." The pages are unnumbered. Approximately 80 pages have been used.

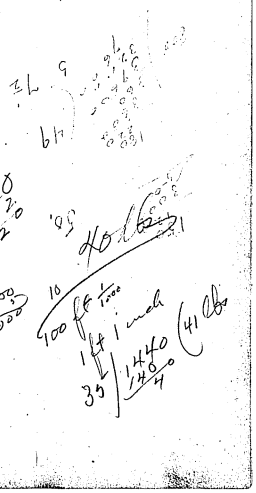
A B

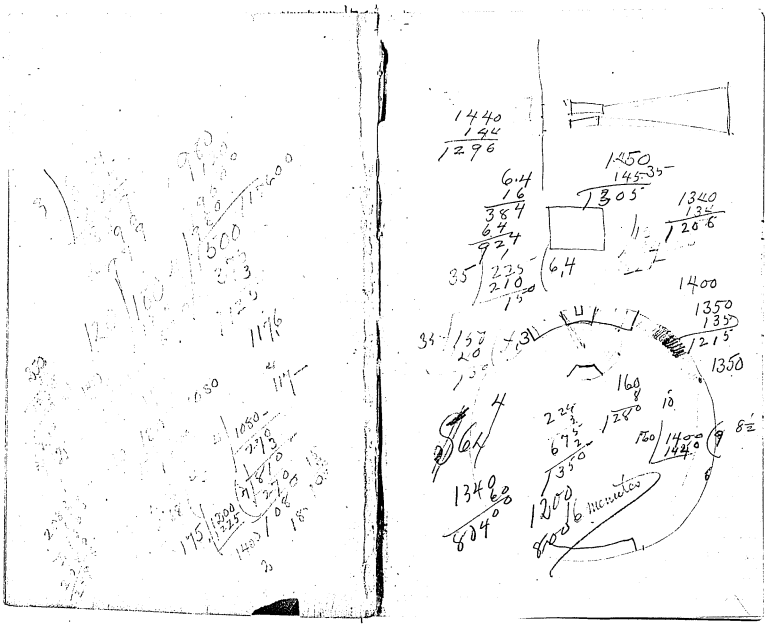
Jan 1 in A — O in B
1 in A — B in B — removes O from B —
1 in A B in B —

Good walk A walking in B —
removes O from A puts it to B —
put good of A —
removed O from B.



STATIONER,
Shop Work Promptly
William Street, N. Y.
#13048





467
920

150
5
750
750
750
750
3000

385 | 150000 | 467
1540
2680
2310
927
9600

80000

27
216
1296
93

July 2

40
3
120

778 Prime
57 | 6000 | 77
46
500

385
2
770
770
770

Nov

60:

365 | 120000 | 31
115
950

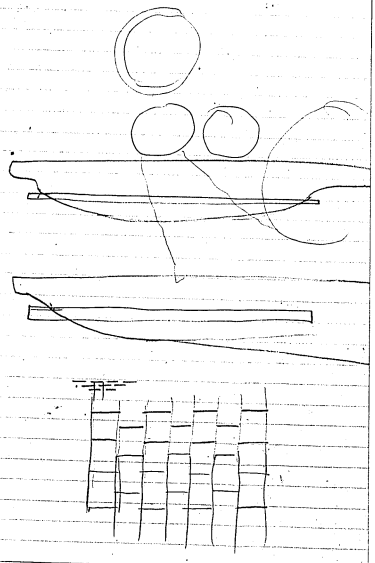
15
60 | 120
5

250

125
5
625
625
625
625
71

75

365 | 150
1540 | 4



300 stacks

1200 ft

4 - 8 -

49
160

8 / 2500

2 / 2300 -
1150

1100 ft. 1 Pair -

4 ft units

550

2 / 275
2 / 137
69

8
16
32
64

7 - 4.87

50 - X 40 -
100 X 80

21
40
84

7 / 120
17.14

50
50
21
21

142
142 -

21
56
105

120
32

1870
1120
750
740
1900
1800
1800
1800
3700
3700

2000
2000
1700
3400
1300
2000
12200

8 / 12200 -
1

8 / 24400
3130

12 / 220 / 15
180
60
205

62500
15625
46875

62500
3844

4 / 220
55
3675
65
3844
1792

3844
15
2 / 125
625
62
124
372

8 / 3844
1000 / 125
80
160
40

1800
1666
1320
1800
1344
1360

45
50
1666
375

3844
76
23064
8200
8844
8615

250
250
1250
1000
2500
2625

125
125
625
1250
125
156 25

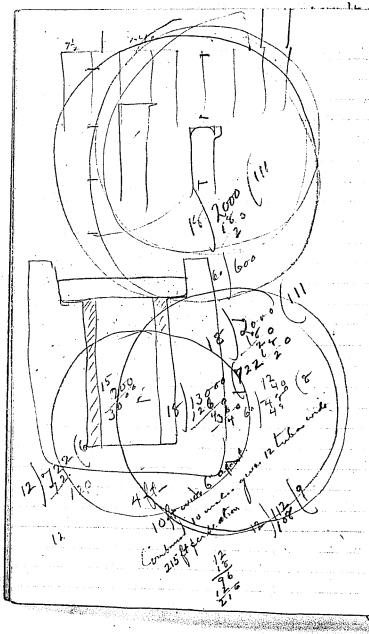
120 / 200
120
8200
8200

12 / 1666
1665
1249.5

1 / 1666
1360
3080
3033
49
24
96
96
117

4.08 / 1660

2



3 lbs water Evap for every 1 ft tube surface to 70 lbs pressure

200 ft per lb. 3000 lbs water must be evap – which at 1 ft per 3 lb 1000 ft of tubes surface, as mean temp in boiler is 2500 at coal end 450 stack end mean of 1500 deg – but in Kiln only have 800 or ½ therefore the rate of drying will be slower (how much) say 2000 ft will be required, hence with 4 inch tubes must have 12000 ft of pipe say each 18 ft in heat! 220 pipes –

Each section has 12 ft. pipes in say 10 sections this would be 8 feet apart, ~~for 40 ft~~ 40 ft – 6 be make ~~pipes~~ 5 ft for pipe given 10 ft by 10 ft pipes 5 feet apart for 40 ft, get 8 ft apart per section – a be OK –

4 ft apart!

8333 lb min

3 | 1400
466

24 | 3200 (133.5 1/2
3200
3200
2

3800 -

60 | 500000 (8333
480
500
480
200

3880 / 1600
30
1800
3600 ft

932 -

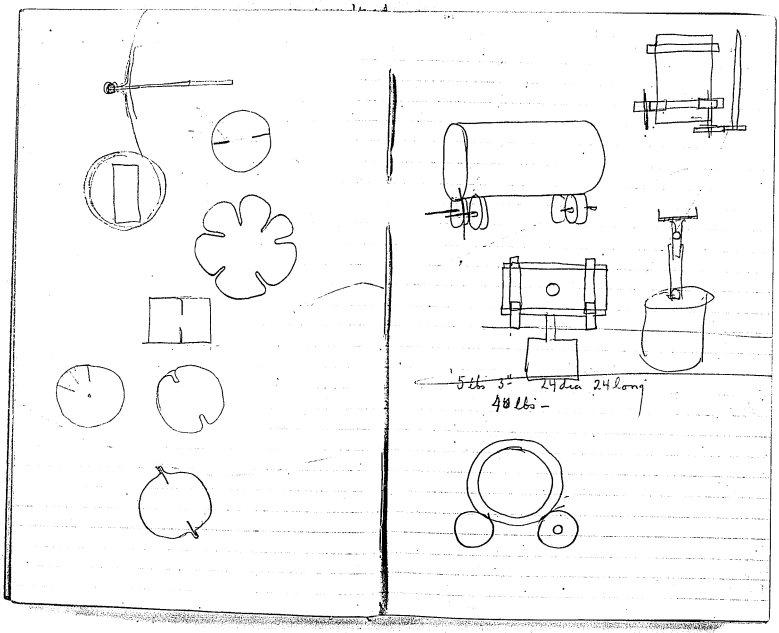
3880 -
60
2 | 232800 (116 -
20
2800
2800
120
120

5 HP 1 ft per hour

200 -

15 1250
600
1500
1500

5 | 18000 -
3600


5 lbs 3" 24 dia 24 long
48 lbs

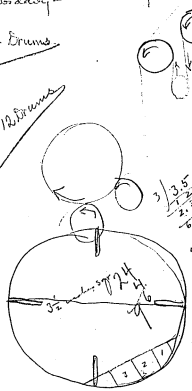
34-X2-

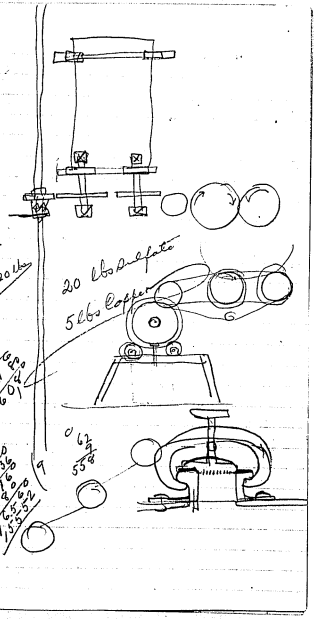
50 lbs - 6 days - 2 days week
2 medium
2 strong

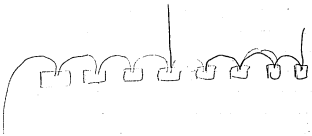
200 lbs daily

24 Drums

12 Drums

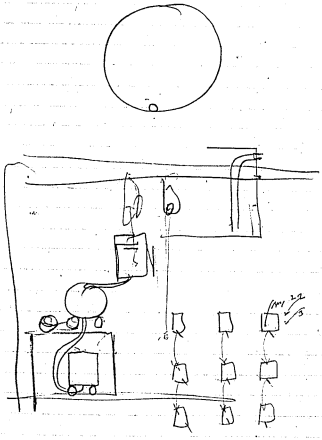






225 Lbs 45 Gal lb bags

18 Drums



Monday No 3 in a — 7 am.
Wed 7 am run 3 into B + put No 2 in a
Friday 7 am run put No 1 in a - run No 2 in B + 3 in C
Sunday 7 am remove f — A. put in fresh No 3

3 in a —
2 in a 3 from a to B.
1 in a 2 from a to B. 3 from B to C.
Remove ff from a, put, put 2 ~~[illegible]~~ from B into a.

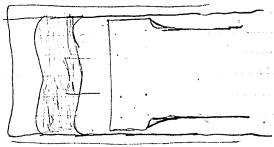
~~16~~ Drains —

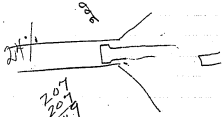
A ○ ○ ○ ○ ○ ○

B ○ ○ ○ ○ ○ ○

C ○ ○ ○ ○ ○ ○

Load all —
Put weak in a, 2 days
No 3 in B + No 2 in a 2 days
No 3 in C - No 2 in B + No 1 in a —
Remove flake in A put fresh in ~~[illegible]~~
No 3 Sol Ru
Run No 1 in B. Remove.
Run 1 in C.



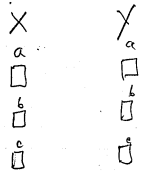


207
234
9
165
1
74
1
69
1
56169
2
8
4
5
3
2
1

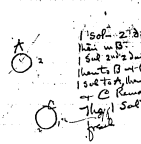
207
207
9
4
4
9
4284
9

56169
2
2
8
0
8
4
5
1
2
3
8
1
4
0
4
2
2

X put in 3
2 days -



a BC - Start No 3 Sol -
then - remove 3 Ephemeed -
put in 2. - run Ilmenite to 3 + remove to other group of 6
as to 3 - put in a - run Ilmenite to another group 2
Remove flake



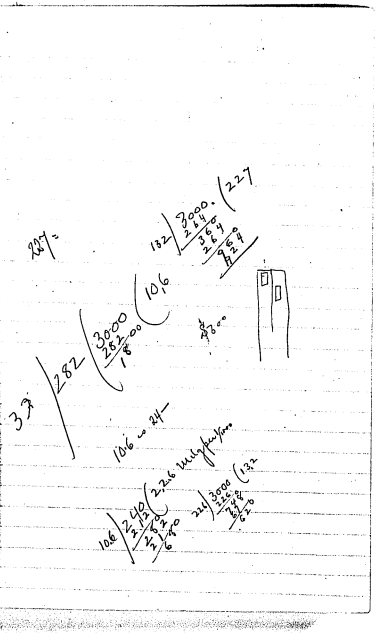
① LiOH group poor -
①① Plain KOH good for plain

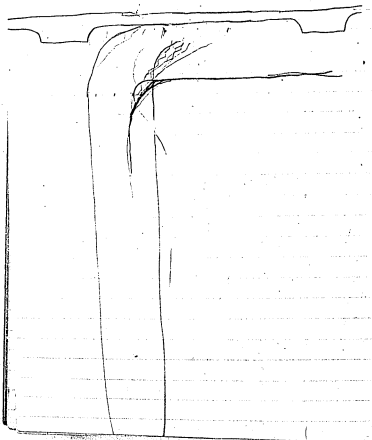
* New Je-
** Higher KOH only

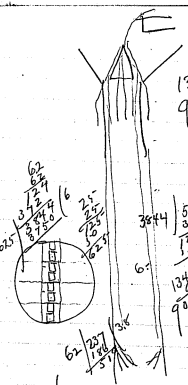
		Cold	50	100	150	200	½	Hot	250	½	Hot	300	½	Hot
Reprocessed 4 ½ thick flake ex. 708 combined to make Conc. $BiCl_3$ $BaCl_2$ 710 concd. Cell KOH. unsaturated KOH, 4.2 f 24 - BISMUTH	8081	1107	1193	1173	1153	1120	1173	253	1050	1127	253	*1150	1247	447
	8082	1100	1153	1147	1160	1133	1193	310	1000	1120	310	1127	1253	473
no LiOH - 21K	8083	1090	1190	1167	1127	1100	1157	293	973	1067	293	1127	1160	223
Dup 8081 BISMUTH.	8084	1230	1470	1437	1343	1240	1580	1137	1240	1463	1023	1253	1470	1137
	8085	1227	1460	1430	1330	1313	1583	1150	1317	1583	1087	1290	1473	1140
	8086	1220	1413	1400	1263	1230	1490	1120	1213	1533	1070	1240	1417	1070
21K 2 LiOH														
68E 719 12 hours in Phosphate Soda dried — 12 hours $BaCl_2$ 4.2 23.8 123 A Flake 2.1 KOH. 7439	① 8773	1247	1180	1250	1247	1263	1283	267	1267	1237	** 607			
	8774	1240	1187	1243	1237	1250	1273	270	1187	1253	523			
E72 719 2 h 12 hours in $CaCl_2$ dried 12 hours in KFluoride 4.1 103 f - 24	①① 8787	1150	1347	1230	1103	1067	1247	743						
	8788	1163	1358	1240	1207	1133	1307	747						
21K 2 LiOH -	Hot in 100	580 1510	713	abnormal										

8084 * 5 ml S.

	350	1/2	Hot	
8081	1158	1277	500	CO-
8082	1247	1367	678	
8083	1213	1327	533	
8084	1210*	1530	1047	
8085	1277	1577	1110	
8086	1217	1530	1100	







134 62X62 3844 in Each
904 of 25X25 — 625 in Each
51169 in Tube

62
8
44
2
37
2244
875
6.25 | 6

25
25
625
625
6.25

3844 | 51169
0000
12527
12522
119
(13.3

6.25

134
8
904

82 | 904
82
8
44
(11

13 | 134

62 | 237
198
39

25

237
229
9

25.0

625 | 51169
6000
1169
5350
(41.8
82

237
229
639
4
4
51169

		Cold	50	100	1/2	Hot	150	1/2	Hot	200	1/2	Hot	250	1/2	Hot
719 – No 3 acid flake – 3 grms BISMUTH fastened to each tube 4.3 24.1 21K2 LiOH. 7702	8805 8806	1170 1170	1320 1307	1250 1293	1490 1433	570 583	1293 1253	1473 1467	580 553	1157 997	1490 1457				
E77 No 3 f 4.2 f heavy 24.1 21K2 LiOH. RUN COLD 7508 E77 soak 1½ hours Conc BiCl3 Aceton BISMUTH	8807 8808	1046 1047	1417 1400	1417 1397	1440 147		1510 1463	1547 1483	1070 777	1410 1407	1437 1430	980 1123	1370 1353	1416 1390	890 1073
E78 3 flake acid – 4.3 24.2 21K2 LiOH RUN COLD 7354 ½ strength BiCl3 Aceton as used – 77	8809 8810	1190 1150	1300 1280	1333 1313	1397 1363		1373 1333	1443 1397	597 843	1317 1310	1387 1363	1107 1010	1293 1260	1367 1317	917 857
Ra 723 filtered in Lab with filter – dried low heat – Decantation – No 3 flake acid 4.3 24.1 21K2 LiOH. 6.53 mi	8916 8917	1093 1120	1280 1287	1280 1287	1357 1370	427 403	1227 1317	1340 1393 new f2	543 550	1213* 1323	1293 1400 Sons 2 Rings	723 703	1180 1300	1317 1450	623 650
Ra 723 filtered in Lab with filter press low heat Percolation – 4.2 f 21K2 LiOH.	8920 8921	1170 1163	1330 1330	1333 1313	1417 1404	383 402	1303 1350	1423 1433	550 570 new f2	1337 1333	1427 1430	667 710	1333 1347	1500 1493	687 697

7508
85
3754
6006
637

15100
2276
23
261

8

450 ft - 18660

8 inch channel

9 bbls/day

1728 | 6272 (3.6 3 day

1728 | 450 -

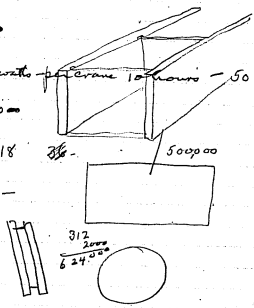
100 pounds for 1 foot hole in one day

90

100
200
20000

20 Kilowatts per crane 10 hours - 50 cents

40
80
5000



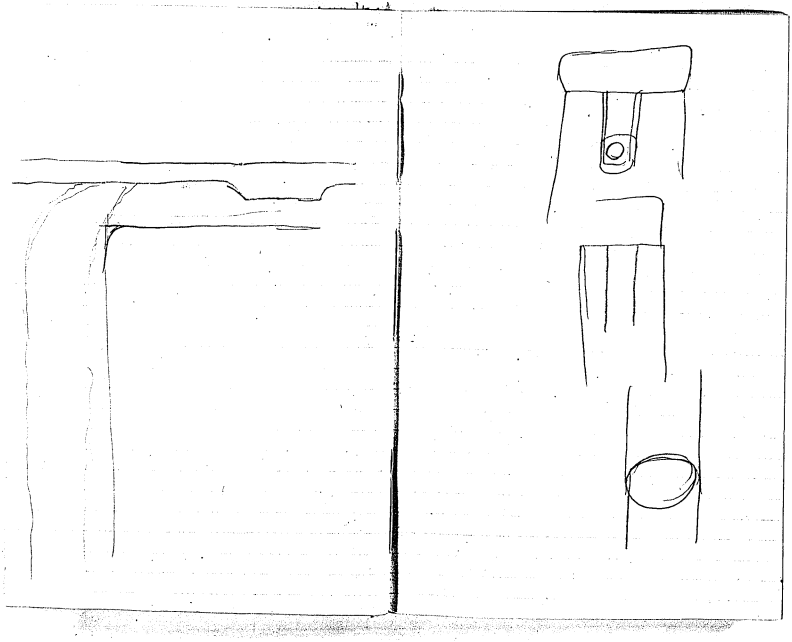
18 36 - 500000

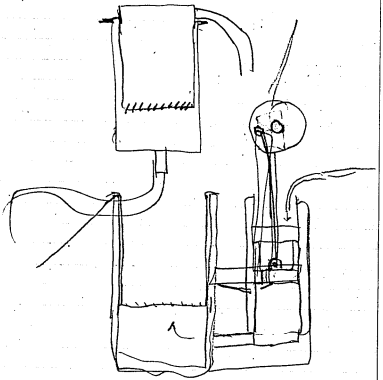
2000 -

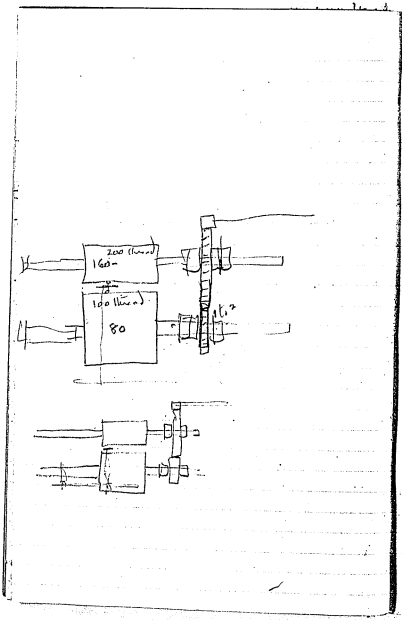
312
2000
624000

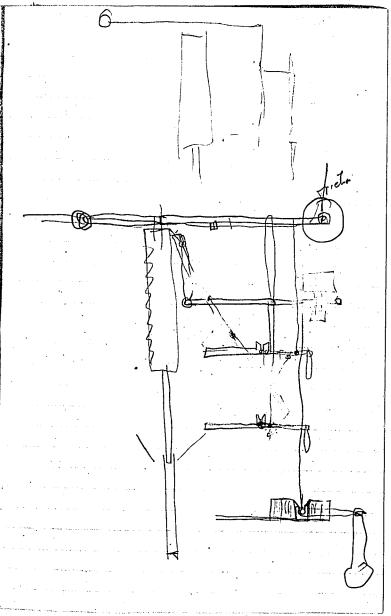
200 V

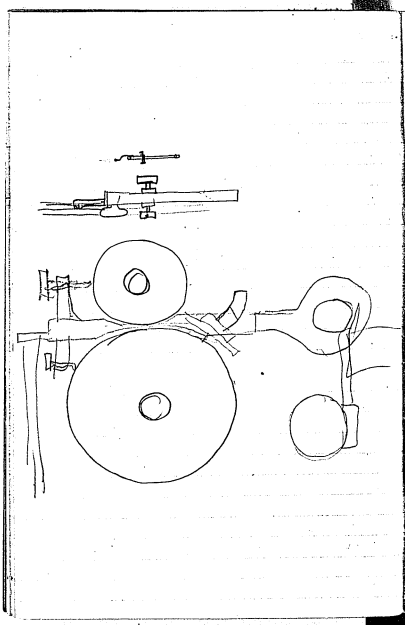
90 V 200 amp






200 (lines)
160
100 (lines)
80


friction



143 | 1413
160
8478
1413
2260

50

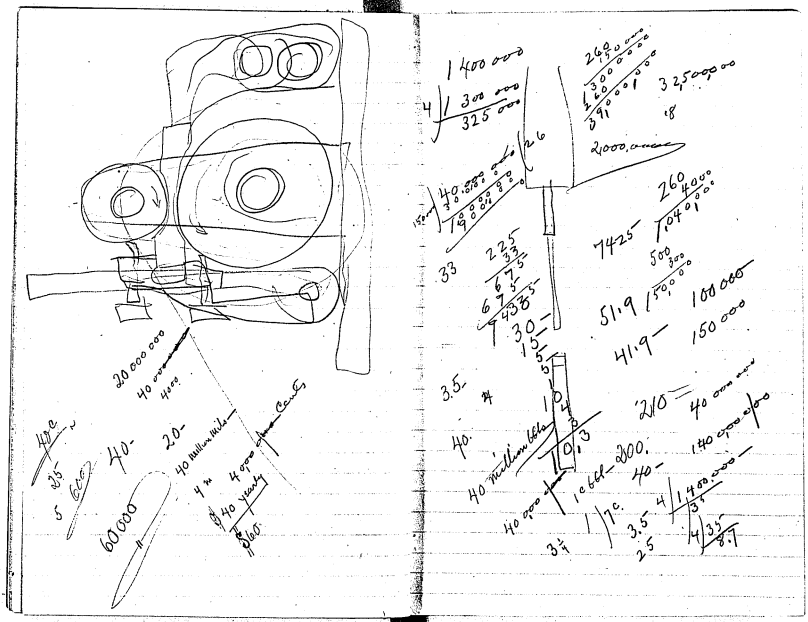
750 − 720

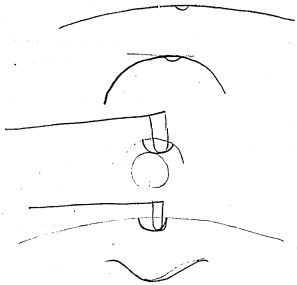
750 | 9.4
160 | 1500
1440
60

160 | 1440
1280

314
45
1570
1256
1413

Light
Telephone
Vehicles
Theatres
Gramophone
House





C 10.4	C 5.2	C 2.6	C 13	C 6.5	C 3.25	
D 9.2	D 4.6	D 2.3	D 11.5	D 5.75	D 2.87	
E 8.24	E 41.2	E 20.6	E 10.3	E 5.1	E 2.52	
F 28.8	F 29.4	F 19.7	F 9.7	F 4.8	F 2.4	
G 6.88	G 34.4	G 17.2	G 8.6	G 4.3	G 2.15	
A 6.16	A 30.8	A 15.4	A 7.7	A 3.8	A 1.9	
B 54.4	B 27.2	B 13.6	B 6.8	B 3.4	B 1.7	

6.88 6.16

3.94 2)11.5/5.75 2)10.3/5.1 2)9.7/4.8 2)8.6/4.3

7.88 41.2 34.4 17.2

19.7 15.4 2)5.72/2.87 2)4.3/2.15

27.2 13.6

30.8 54.4 2)3.4/1.9 2)3.8/1.9

C 258 WL 52 - 13° G 387 34.73 — 8.68

D 290 40.04 — 11.54 A 435 30.88 — 7.72

E 325 41.25 — 10.25 B 488 27.54 — 6.88

F 345 38.97 — 9.74 C - 517 .26 — 6.5

4)52/13

4488 / 1120 (2.29.5 2245 4)5.7/1.4

976 1446 1120 3265 2240 1025 4488 2244 2.64

258 / 1120 (4.341 258 1032 880 776 1040

4341 / 5642 / 4342 / 3446 / 1.3 / 3446 / 4 / 13.8 / 3.38 / 1.2

325 / 1120 (3.446 975 1450 1300 1500 1300 1.25 3.25

290 / 1120 (3.862 870 2320 1740 1800 1740 1.2

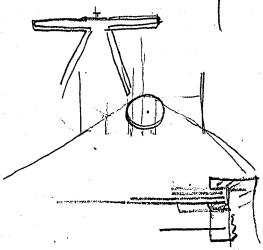
4862 / 3724 / 3.8.74 / 4 / 15.86

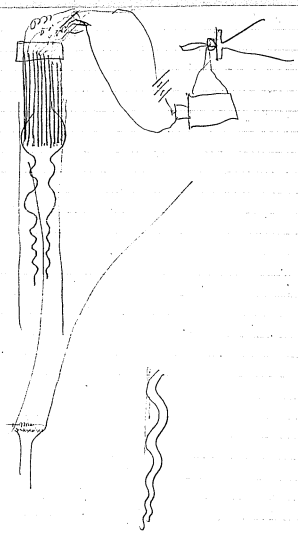
345 / 1120 (3.246 1035 850 690 1600 1380 2.20 1.38 1.44

387 / 1120 (2.894 774 3460 3096 3640 3483 1.57

2894 / 5.7.9.8 / 2.8.9.4.8 / 4)5.417 / 8.684

49 - Resonators for Piano
of octaves -





4/52
13 inches —

256 | 1120 | 4.3
1024 | 12
960
46
1945
874
37
53,47

1120
12
0

20 ton car 50 lbs pull ton
40 miles hour

1000 lb draw-bar pull —
10 mile trip —

2000 lb | 52400000 (26 26 HP
40 00000
12400,00

746
26
4476
1492 6
7937

20 Kilowatt hours

10 miles in 15 min —
Current given off at rate
of 80 Kilowatts per hour — 40 in hour
10 mins want each end or round trip
1 hour — 10 hours daily 200 Kilowat
hours to go stored —
A.B. = 440 ccells - 500 watts Each
500
2200 00 - Kilowatts —

$22 per cell
440
880
880
9680

$9680 —

New Castle — Cleveland Interurban
1 Car 1 hour
2 30"
4 15
5 12
6 10 minutes —

discharge rate,

80 Kilowatts —

1 hour — 500
120

120 | 7500 (650
720
300

60 amp
500
30,000

65
650
120
1300
650
7800

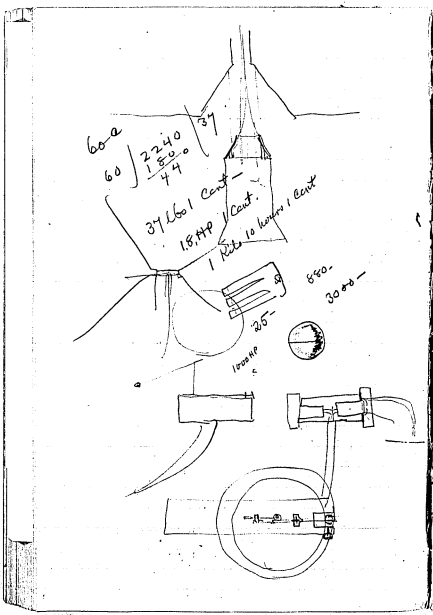
3 100
150
3
750

440
120
880
440
528

60 1200
7200

2

3 Hours


60-a
60) 2240 (37
180
44
37 601 Cent
1.5 HP 1 Cent
1 Rate 10 hours 1 Cent
880
3000
25
10 HP

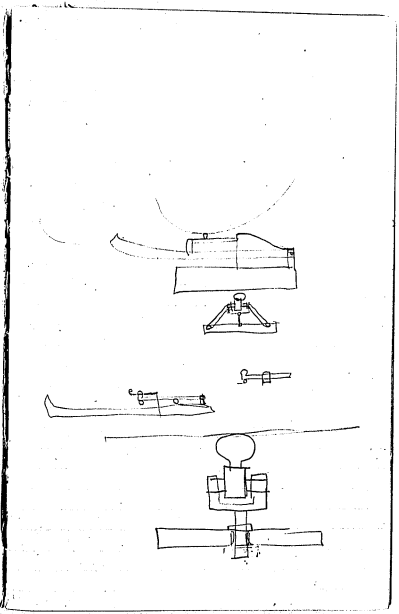
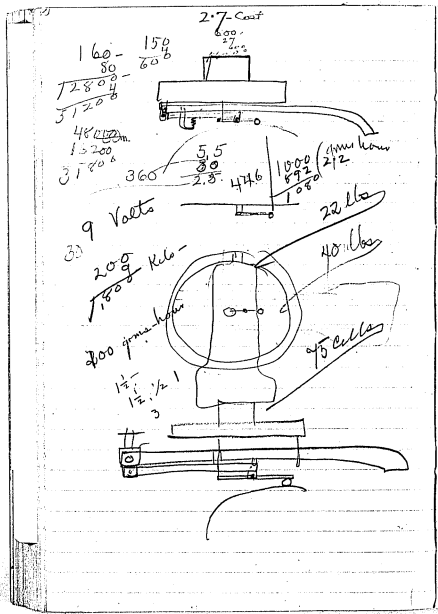
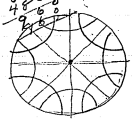


Fig 6
Fig 7


2.7 - Cost
160 - 150
80 60
2800 -
3200
48
15200
31700
360
55
80
2.3
4746
1000
892
2.2
1080
9 Volts
22 lbs
40 lbs
200 Kilo -
1800
400 grams hope
95 cells
1½ -
1½ 1½ 1
3

120) 777600 (6480
720
576
480
960
960



1728
450
8640
6912
777600 450 ft

750
63
3750
4500
4875
8

45
8
30

4875
2500
7375
1

75

5
40
3
20

84
8
672

8 Gross 14

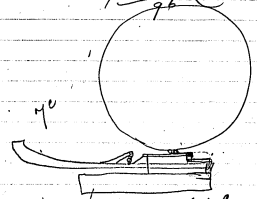
30
30
18
18
96
7
3) 672
224
448

9 Week

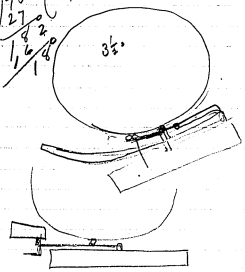
672 –
448 –

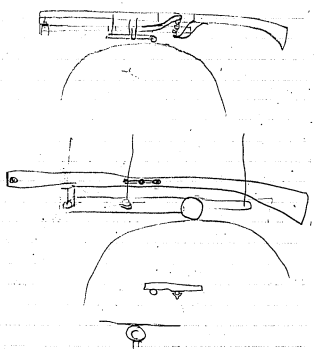
14) 96
12
192
84) 1792 (144
14) 1792
3

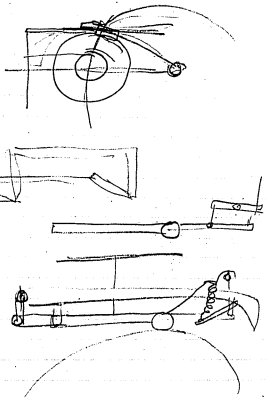
672 –) 4800 (71
4704
96

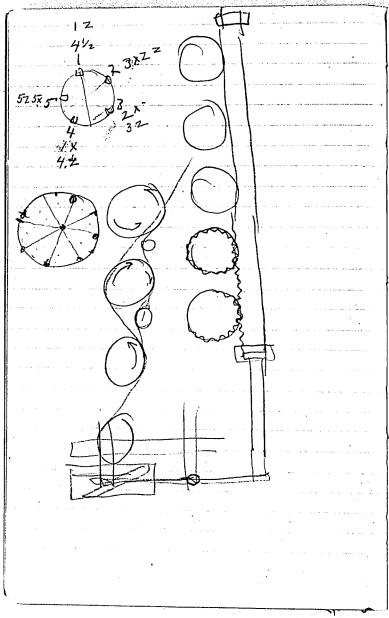


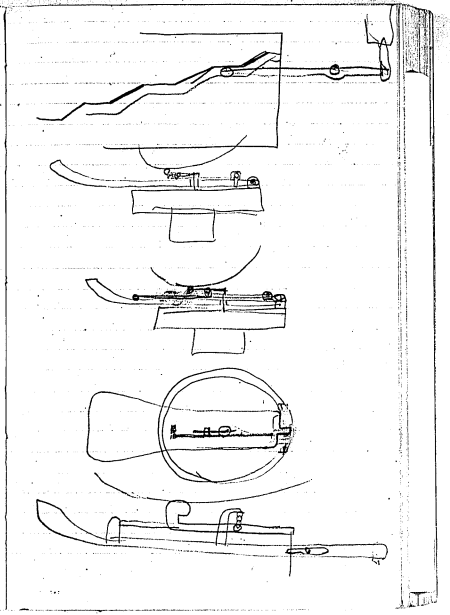
27) 450 (16.6 16.6 C
27
180
162
18








1 z
4½
2
3½ z
5z 5z 5
3
2 x
3 z
4
x
4½



Put in Cups — 4.0
" Stiff — 2.0
Put on a press — 0.5
Take out + groove 2.0

0 10 —

12. 60 —

5 Cells daily
6 " 6)175
29
1

30 c =

2 48
12
96
48
576
432 | 576
288
864

50
20

190
30
570

190
57
247

Labor ~~30~~ 50
Can 50
90
190

100 - miles
3

31200 -
15600
4680

30 000
5
150000

45 -

4000 -
2000
4680) 600000 (12.8
468000
132000
93600
384200
56

9000
340
900
306000
402 000
330 000
72 30 -

12.8

60 a

15

150. 600) 300 000

300

900
100

250.
250
80. 80) 150 (187.500 600
80
700
640
560
4

125
3
375

600000

2c

[illegible]

200 000 - 2
150 000 - 4
60 000
30000 - 1

15000
1200000

42

125
42

7 | 55
8

120 | 1335 (11,1
120
135
120
15

8 | 250
31

93

11 cc

2.300

93 grms [illegible] to do all work —

10000

45 —

1335

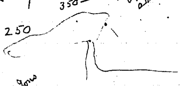
280 grms

250

350 —

3000

12



3500

1.1900000

25 tons

1870000

5510000

15

5

9/16

330.

1870000

340

2.720000

1,500

1,170,000

1.800000

240

200 —

9

310
23
990
620
7 13

350
23
700
1050
8005

11

3/1693 3/1201
3/958 6 / 1993
3/580 6 / 1935
3/439 6 / 1765
3/597 / 1992
3/558 3 / 1861
3/217 9 / 826
3/597 3 / 1978
3/491 2 / 971
3/477 6 / 1592
3/465 5 / 1852
3/405 5 / 1352
3/1145 / 1648
3/552 1 3 / 1738
3/485 / 1617
3/360 4 / 1201
3/466 4 / 1555
3/413 / 1378
4 5 1
2/1596 / 1502
3/490 0 / 1633
3/225 4
3/17 34 / 1245
3/472 7 5 / 1423
3/416 / 1388
3/415 8 / 1386
3/170 0 / 1233
3/449 9 / 149
3/155 / 517
3/389 6 / 1297
3/494 6 / 1649
3/550 4 / 1835
3/135 4 / 1785
3/467 1 / 1567
3/165 9 / 553
3/517 5 / 1728
7 L
8 3/378 4 / 1261
3/437 / 1745
3/448 3 / 1494

3/417 5 / 1392

900
100
800
200
100

3/509 2 3/3829 3/4955
1697 1276 1652 3/4966
1653

3/277 1 3/2742 2
1237 1247 3/4517
1506 3
3/477 1
1590 3/4379 3/2792
1457 1931

3/167
1722 3/4163 3/1771 3
1389 1571
3/4331 1 3/2501 3/1275 1
1437 835 1250
3/4980 3/4422 6
1666 1497 3/4655 9 3/4804
1553 1601
3/3970
1323

3/2481 2 3/4725 3/4457 3/3713
1681 1375 1524 1238 3

3/2538 3/4925
677 1242 3/3354
1118
3/2463 3/2463
1486 821

3/2759 3/3293
786 1095

4 10
20/800/20
40
60

NOTEBOOKS BY EDISON AND OTHER EXPERIMENTERS

The ten groups of notebooks (170 books) in this subseries primarily cover the period 1899-1910, although some groups extend as late as 1914. The entries in the initial notebooks in many of the groups are mainly by Edison, whereas the later books, generated after the pattern of tests had been established, record the work of other experimenters. Most of the notebooks belong to groups of numbered storage battery test books. Groups 5-8 are clustered together and relate to the same set of cells. One group of notebooks pertains to the composition of phonograph record blanks, while another contains the results of ore assays. Among the Edison employees whose work is represented in these books are Ralph Arbogast, Charles Dally, Ignacy Goldstein, Otto Groethe, O. A. Rogers, and Ademor N. Petit. The books are arranged in the following order:

Group 1: Battery Test Books, Nos. 1-54 (55 books)
Group 2: Alloy Books (6 books)
Group 3: Battery Endurance Book No. 1; Work Books, Nos. 1-10 (10 books)
Group 4: Tube Books, Nos. 1-36 (35 books)
Group 5: Battery Record Books, Nos. 1-30 (30 books)
Group 6: Long Tube Books, Nos. 1-7 (7 books)
Group 7: Long Tube Record Books, Nos. 1-6 (6 books)
Group 8: Battery Works Tube Books, Nos. 1-4 (4 books)
Group 9: Phonograph Record Composition Books (5 books)
Group 10: Nickel-Cobalt Ore Assay Notebooks (12 books)

Group 1: Battery Test Books, Nos. 1-54

The fifty-five notebooks in this group (the first book has no number) cover the period November 1900-March 1902. The entries in the first six books are by Edison, while the remaining books are by unidentified experimenters. The books contain records of storage battery tests, numbered from 1 through 1777. The early entries record tests on a variety of metals and alloys for use as electrodes, as well as tests of various electrolytic solutions. By the second book, Edison established a standard format for indicating the results of the endurance tests that were run on individual cells, recording the time, current, voltage, and capacity during charge and discharge. The later books by Edison also reflect his narrowed focus on a nickel-iron composition. Labels on the front covers of some of the books contain notations by Edison regarding the importance of the data contained therein.

Group 2: Alloy Books

The six notebooks in this group cover the period April-June 1902. The first book contains notes by William A. Warren regarding the production of alloys for use in various projects, including storage battery electrodes and fluorescent lamps. Near the end of the book are entries pertaining to a coherer transmitter for wireless telephones using carbon granules. The other books contain listings by Edison of the alloys to be fused, along with occasional entries by Warren and Henry S. Harris noting the results.

Group 3: Battery Endurance Book No. 1 and Work Books, Nos. 1-10

The ten extant notebooks in this group (Work Book 4 has not been located) cover the period November 1904–December 1906. They consist of an Endurance Book and nine Work Books, which describe the performance and characteristics of experimental storage batteries. The first book, entitled "Endurance Book #1," was used by Edison and later by Walter E. Holland to rate the endurance of groups of cells. Included are tabulated ratings of the performance of some of the cells numbered from 4060 through 9343. Separately tabulated measurements give caliper readings before and after the tests, which possibly refer to the swelling of pockets in the electrodes of the "E" type batteries. The inside front cover contains an "Index to Section I and II," listing the order of entries in the book. Two indexes in the middle of the book provide a partial description of the experimental characteristics of each group of cells.

Although the individual entries in the Work Books are less detailed than those in the Endurance Book, the books in this set contain records of endurance tests for all cells numbered from 4000 through 13127. Most of the entries in Books 1-5 are by Edison. The succeeding books show a steady decline in entries by Edison, and the last book contains only entries by Walter E. Holland and by other unidentified experimenters. At the beginning of the first Work Book is the following notation by Edison: "New experiments started at Laboratory in our new test room to discover why nickel elements in some cases lose their amp capacity after being in use and also to discover a remedy that is practical and commercial."

Group 4: Tube Books, Nos. 1-36

The thirty-five extant notebooks in this group (Book 31 has not been located) cover the period July 1905-February 1914. Most entries in the first twelve books are by Edison. The remaining books show a rapid decline in the number of Edison entries. By Book 16, there are only occasional calculations and brief notes by him. Most entries in the later books are by unidentified experimenters. The books contain records of experiments relating to the nickel tubes used in Edison's storage batteries. The tests are numbered from 90 through 9950. Tests 1-89 can be found in N-03-06-19 (see "Notebooks by Edison"), which contains other experimental work and is not included in this numbered group of tube books. A new series of enumerated tests begins in Book 16, with numbers from 1A through 13657 (the "A" is dropped after test 10569). The first page of Book 1 contains the following notation by Edison: "Experiments with perforated tubes & flake metal with various sticky sub[stances] & proportions & manipulations." The tests involved varying the compounds used to hold the nickel flake in the tubes, as well as altering the process by which the flake was tamped down in the tubes. Labels on the front covers of some of the books contain notations by Edison regarding the importance of the data contained therein.

Group 5: Battery Record Books, Nos. 1-30
Group 6: Long Tube Books, Nos. 1-7
Group 7: Long Tube Record Books, Nos. 1-6
Group 8: Battery Works Tube Books, Nos. 1-4

The dated entries in these forty-seven notebooks cover the period February 1907-July 1914. The entries are by Edison, Walter E. Holland, and other experimenters. The thirty Battery Record Books contain logs of cell endurance tests that detail the performance of cells using various preparations of metal flake (primarily nickel, but also some cobalt). Many of the tests involve standard nickel and iron compounds prepared by Ralph Arbogast, Jonas W. Aylsworth, Charles Daily, Ignacy Goldstein, Thomas D. Greenley, Otto Groethe, O. A. Rogers, and others. These compounds are indicated by a number, often preceded by the name of the experimenter or by a designation such as "R A," "J W A," or "Dr G" [Groethe]. Entries pertaining to the preparation of the tubes used in the cells can be found in three sets of Long Tube Books. All three sets relate to the same cells, and the numbers assigned to the tubes correspond to those assigned to the cells in the endurance tests. Labels on the front covers of some of the books contain notations by Edison regarding the importance of the data contained therein.

Group 9: Phonograph Record Composition Books

These five notebooks cover the period January 1909-October 1912. Most of the entries are by Ademor N. Petit. Several pages of loose notes by Edison have been inserted into four of the books. The books contain notes and drawings regarding efforts to produce an improved compound for phonograph records. Included are lists of numerous compounds, most of them utilizing shellac, which were tested by Petit for properties such as hardness, durability, ability to be cut by a recording stylus, and consistency under differing temperature and humidity conditions. The loose pages by Edison consist of directions and suggestions for Petit, along with comments on the ongoing status of the project. The inscriptions on some of those pages indicate that Petit sent frequent reports to Edison during the inventor's stay at his winter home in Fort Myers, Florida.

Group 10: Nickel-Cobalt Ore Assay Notebooks

These twelve undated notebooks were probably used during the period 1905-1907. The books primarily contain the results of assays made by unidentified employees to determine the presence of nickel and cobalt in ore samples. Within each book the entries are consecutively numbered, generally beginning with number one. N-06-00-00.1 begins with number 1254 and is a continuation of N-05-11-09. In addition to the assays, there are a few experimental notes by Edison regarding the processing of these ores, along with a few entries noting the locations of mines. Also included are requests for samples, notes about samples received at the laboratory, and notes about the availability of ores. In several of the books the initial entries in the assay log are by Edison, while subsequent entries are by other experimenters. In such books only the Edison material has been selected, although the unselected pages do contain occasional notations by Edison regarding the assay process or results.

Notebooks by Edison and Other Experimenters
Group 1: Battery Test Books, Nos. 1-54

The fifty-five notebooks in this group (the first book has no number) cover the period November 1900-March 1902. The entries in the first six books are by Edison, while the remaining books are by unidentified experimenters. The books contain records of storage battery tests, numbered from 1 through 1777. The early entries record tests on a variety of metals and alloys for use as electrodes, as well as tests of various electrolytic solutions. By the second book, Edison established a standard format for indicating the results of the endurance tests that were run on individual cells, recording the time, current, voltage, and capacity during charge and discharge. The later books by Edison also reflect his narrowed focus on a nickel-iron composition. Labels on the front covers of some of the books contain notations by Edison regarding the importance of the data contained therein.

Only the books by Edison, tests 1-382, have been selected.

Book #	N-Number	Label on Front Cover
		[additional information supplied by the editors appears in brackets]
Selected Books		
--	00-11-24	"Early Expmts on Iron Elec[trode?] in KOH, soaked in Carbon plates"; "Started Nov. 24th 1900"
1	00-12-05	"Edison Storage Battery Vol I"
2	00-12-20	"Edison Storage Battery Vol II"
3	01-01-18	"Edison Storage Battery Vol III"
4	01-01-01.1	"Edison Storage Battery Vol IV"; "Storage Battery Important Data"
5	01-04-05	"Not very important Battery"
Books Not Selected		
6	01-05-04	"Edison Storage Battery Vol VI"
7	01-05-17	"Edison Storage Battery Vol VII"
8	01-05-30	"Edison Storage Battery Vol VIII"

9	01-06-07	"Edison Storage Battery Vol IX"
10	01-06-10	"Endurance Tests June 10, 1901 No. 10"; "Edison Storage Battery Vol X"
11	01-06-13	"Edison Storage Battery Vol XI"
12	01-06-19	"Edison Storage Battery Vol XII"
13	01-07-01.1	"Edison Storage Battery Vol XIII"
14	01-07-04	"Edison Storage Battery Vol XIV"
15	01-07-10	"Edison Storage Battery 706- Vol. 15"
16	01-07-18	---
17	01-07-29	---
18	01-08-01	---
19	01-08-13	---
20	01-08-19	---
21	01-08-23	---
22	01-09-03	"Not very Important"
23	01-09-13.1	---
24	01-09-13.2	---
25	01-09-18	"Special tests"
26	01-09-23	"Not Very important"
27	01-10-01	---
28	01-10-03	"Not Very Important"
29	01-10-05	"Not important"
30	01-10-14	---
31	01-10-19	---
32	01-10-26	---
33	01-10-29	"Battery Not very Important"
34	01-10-31	---
35	01-11-04	---
36	01-11-11	"Battery not important"
37	01-11-14	---
38	01-11-22	---
39	01-12-02	---
40	01-12-09.1	---
41	01-12-09.2	---
42	01-12-12	---
43	01-12-15	---
44	01-12-20	---
45	01-12-24	---

46	01-12-30	---
47	02-01-03	---
48	02-01-09	---
49	02-01-20	---
50	02-01-24	---
51	02-02-01	---
52	02-02-15	---
53	02-02-27	---
54	02-03-04	---

Notebook, N-00-11-24

310
15
1550
10
3465
60) 4200
45

Nov 24th 1900

Charcoal Carbon plates original weight 6.12 grams about 12 grams O/X Hg in them, 4 times have put in Nit Hg & then reduced in R.E. Pot then washed, then dried on hot plate then more Nit Hg - last two times reduced Hg to metallic state by current then soaked in water then dried dressed it with Nit Hg then reduced by current & dry same thing again - this is Reducing to Hg - Weight from previous reading this plate will give 2 amphoros on Hg2O

On reducing MA.

450 pm	370	
455	340	
500	325	
515	360	
530	360	
535	390	
545	390	
610	380	opened ckt 750 MAH
Monday 845 am	330	6
915	350	quiring - 900 MAH

330 / 60

310

60 | 310

60) 18600

18600

0

Nov 24 1900 —

Charcoal plate, 10 charcoal 4 coal tar ~~[illegible]~~ Charged upon lower, through 200 mesh — Soaked in proto chloride from then dried + put in Sulphide ammonia then dried + redosed with proto chloride + again put in Sulphide Nitr — This is 2nd time, cleaned surface of plate + put in KOH reducing —

Time	MA	
353	370	
356	680	
4.00	655	
402	380	good too great to clearly
405	380	109 watt
410	380	140 "
415	380	171 "
435	360	295 " gas starts coming out
440	370	
445	370	356 "
450	370	386 "
455	340	414 "
5 pm	325	442 "
5 15	360	532 "

530	360	622 MAH – Gassing allowed
		652 " Duplicate only gassing in one shunk & very slight on Ni.
535	360	Reversed ~~[illegible]~~ 6 cells –
		Now oxdz –
545	390	1-Shunk on each –
6 pm	390	162 MAH
6 pm		Reversed to Reducing –
6 pm	375	
610	375	one gassing among the others slight
		Opened cell 610 pm –
845 am	330	Monday – 6 cells gassing –
915	340	gassing full –
Revsd		Oxdz
915	350	
935	390	120 MAH –
940	390	152 "
10 am –	380	272 "
1005	380	303 "
1010	385	334 "
1015	385	365 "
1020	386	396 "
1025	386	427 "
1030	386	458 "
1040	388	520 "

1045	551	1040 one of them gassing on the
1048	571	good one standing slight on W
1055	380	Reversed to Reducing
11 am	380	31 MAH.
1105	350	62 "
1115	380	126 "
1120	350	157 " Active leading gas
1125	240	180 " weight on W side
30	235	200 " No gas at the elevator
1135	235	219 " slight gas on the left
40	235	238 "
1145	235	257 " gas on the left
1147	160	264 one has several observing gas stroke
1200 noon	160	284
Commut off		Reversed to Only at
1255	250	41 MAH.
1	240	61 "
10	240	101 "
20	250	142 "
1 5	240	206 "
10	240	226 "
20	240	286 "
30	240	306

350 Mathes Oxdy —

		MAH.	
215	240	326	
220	235	346	[illegible]
		350	[illegible]
220 Reversed		Reduced	[illegible]
225	236	MAH	
230	236	19	
235	236	35	
240	240	58	
245	240	78	
250	240	158	
310	240	178	
315	240	178	
320	240	236	good on the slight
Rows	Oxdy		
325	240		
330	240	20	
335	240	80	
350	240	100	
355	240	120	
400	240	140	
410	240	180	
415	240	200	
425	240	240	
430	240	260	
435	240	280	good

See next page

Nov 24 1900 —
Tried charcoal plates 10 grms charcoal 4 lots
each mixed with 6 grms of about 25 Nm salt
test on Cuprous chloride that the Sulphide w the
best, the dry plates 1/2 reduced by H
before formal Carbon other 1/2 not —
all run up slowly at high fused —
The sulphide plate weighed the most &
gave 3 times the compass of any other
of the plates, plates not reduced by H
were best — Evidently the plates had
for no FeS after Cbon whereas the
other salts left metallic iron —
This has that mysterious scale or something
produced by high temp which
prevents it from being oxdzd by Cuprous
in KOH — the Sulphide is easily oxdzd or
reduced by C in KOH — all that is
now [illegible] is to get Carbon plate more
porous so the swelling of the Hydroxide
will not bulge it out
tonight we tested 4 plates made from
Charcoal & think too all worked. that
50 100 150 300 atmos pressure
the 50 was very porous & always Enough
after Carbon it also took the
greatest quantity of ~~FeOH~~ —

280 NEA. Oxdg —

Reversed Redcg

435	220		Now Redcg
440	220	18	
4	220	54	
5	220	90	
505	210	107	
510	210	124	
515	210	141	
520	210	158	
525	210		
530	210	192	Jumpy left hand, leg hi
535	210	207	
Reversed Oxdg			Oxdg
535	210		
540	210	17	
545	220	34	
6pm	220	94	
605	230	112	
610	220	152	Opened 610
730	230		Closed 730
745	230	189	
753	220	227	
8	220	243	quiving along

Reversed Redcg —

805	240		
820	220	55	
825	220	73	
850	220	164	quiving on Hi's left
9	220	200	
910	220	236	" " " sling
925	220	291	" " "
930	210	304	" " "
Reversed Oxdg —			
930	210		
950	220	66	Oxdg
10pm	220	104	
1010	220	140	
1020	225	176	
1030	225	212	no quiving
1035	220	230	"
1040	220	245	1 quiving on Hi.
1050	230	264	1 both quiving
			Opened for night
920	350		On Reducing
940	350	110	
910	350	285	quiving allover body
935	"	430	" " "
950	370		Reversed Redcg
1025	360	210	
1035	360	270	quiving

100 atmos. pressure plate
thro 100 on 20's mesh charcoal.
hand fan - cooked seal lines
Fall - Now Reducing

10 am	380	
1020	380	126 mall
1045	386	286 "
11 pm	380	381 "
1105	385	412
1115	350	474
1120	380	505
1125	240	536
1130	236	555
1135	236	574
1140	235	598
1145	235	612
1149	160	619
1150	160	627
12 mer.	160	643 12 noon Charcoal off
1255	250	
105	240	683 mall
110	240	723 gasq. slightly
115	240	763 " " on Hi
115	Reversed to Oxdy	

763 MAH on Reducing

		MAH	
115	240		Oxdg —
130	240	62	
145	240	124	
150	240	144	
205	240	[illegible]	
210	240	224	
215	240	244	
220	235	264	
225	233	286	
230	236	305	
235	236	324	
240	240	344	
245	240	364	
300	240	424	
310	240	464	
315	240	484	
225	240	524	
330	245	544	
345	245	604	
350	245	624	
355	240	644	
400	240	664	
410	240	704	quoting. 704 on Oxd
Reversed to Reading			
410	240		
15	240	20	

709 MAH on O2S —

		MAH	
425	240	60	
430	240	60	
435	220	100	
440	220	125	
5 —	220	140	
505	210	208	
510	210	225	
515	210	242	
520	210	259	
525	210	276	
530	220	310	
535	220	327	
540	220	344	
545	220	361	
550	220	378	
6 pm	230	410	gassing in very slight
605	236	427	
610	236	444	Opened 610
700	230		Closed 730
745	220	507	
755		540	gassing all over
Reduced to		0 Amp	
755	230		
820	220	91	
855	220	219	
910	220	274	

920	220	310	
925	210	327	
930	210	344	
940	210	378	
950	210	412	
10 pm	220	448	
1010	220	484	
1020	220	521	
1030	220	557	
1035	220	575	
			Opened at 1 per night — on Reducing
820	350		
840	350	110	
910	360	285	not gassing —
915	360	315	gassing in ni. slight
920	360	345	" more freely on Ni
940	360	455	gassing all over
950	370		Reducing Power
1025	360	210	
14	360	420	no gassing
1105	360	448	gassing slight on Ni

Opened 575 MAH

683 Red 1st
704 OX
410 Red
575 OX
448 Red

About 400 lbs of ft for this Carbon
with Full Capacity

100 or 200 mm KOH dont seem to go into NO5

Sulphide Plate 10 Chm 4 Ian 6

Sulphide Fe - on at 745 50 atmos

		Mark	
745	230		
830	220	162	
855	220	253	
910	220	308	after gas mein
930	210	396	(No plate sound
10 pm	220	486	except bulge out at forge)
1020	225	556	
1055	235	689	
1105	385	753	
1115	390	818	OX ng -
1126	390	883	
1130	390	915	off for night
820	350		OX
840	350	1025	
910	360	1200	
940	"	1380	
950	"	1440	going slight out ni
950	370		Revised Reding
1025	360	260	

2 plates 13 brush full. Ferric chl thro 2nd
many times with NH_3 + put in dil NH_3

Redey

910 422	700 385	[illegible]

No 6 - 100 atmos Traills Sulphed.
Ow 2 Jet unbroken

810	240		
830	220	72	
855	220	163	
910	220	218	
930	210	286	Thin plate [illegible] after
10 pm	220	386	300 illumination
1020	225	458	blue out all
1055	225	589	
1055	385		
1105	390	653	Motruff Jas
1115	390	718	
1125	390	783	
1130	390	815	off for no plot
820	350		OK
840	350	925	
910	360	1100	
940	"	1250	
950	370		Revised Reday
1025	360	210	

A01 – 10 g ether / 100 m 200
4 [illegible] – 100 atmos
3. Sulphide [illegible]
Ref. Cond. 7 gms after 5.2

No 2 10 chars 5 Jars
100 in 20 No others
4 Carbonate Iron –
Before Carbon & gone after 5.47

920
125
109

648
6
13

311
4

1125
13

104 75 atmos Sulphide
4 Sec

810	240		
830	220	72	
855	220	163	
915	220	218	after 800 min
930	210	269	The plate [illegible]
10 pm	220	379	but Cracked
1020	225	453	not 1/32 -
1055	225	584	ng
1055	385		
1105	390	648	
1115	390	713	
1125	390	776	
1130	390	810	off for night
820	350		
840	"	920	
910	360	1095	
940	"	1275	
950	360		Reversed Relay
1025	360	210	

100 on 200 1102 -
10 chan 47 Tan -

Sulphide -
100 ohms

		MAH	
815	240		
830	220	54	
855	220	145	
910	220	200	
930	210	268	
10 pm	220	374	after 800 mein
1020	265	452	this plate [illegible]
1055	230	583	but has small piece
1055	385		near [illegible] off -
1105	390	647	
1115	390	712	
1125	392	777	
1130	390	809	off for night —
820	350		OK
840	"	919	
910	360	1094	
940	"	1276	plate badly bulged
950	"	1330	going slightly in [illegible]
950	Reversed	Reading	
950	370		
1025	360	210	

(-) 1 to 65
1 to 65

919
175
1094

(+) 1

378
74
452 = 112
65
177

No 1 10 Charcoal 100 on 200 100 albino
4 Tar —
3 Sulphide from
Before Carbon 7 after 5.2

		mA.H.	
350	330		
410	345	110	
430	350	220	
5	315	377	
520	315	487	
545	315	618	
6 pm	320	700	
625	320	833	gassing slight
630	Resistance		
		20 mA at 630 pm	
		750 pm 280 mA H	

Put 2 tonic pla[illegible]
on at 810 1500 ma —

810	570	47	
9 pm	590	775	
905	600	525	
910	600	575	
915	600	625	
920	600	675	
930	600	675	
940	580	650	
940	[illegible]		[illegible]
950	590	906	
10 —	590	964	

Acetaloform

930	600		
940	350	100	
950	330	158	[illegible]
10 —	340	200	[illegible]
10 —	200		changed to 200
10.5	200	216	[illegible]
10.10	200	232	
10.20	200	264	
10.30	210	296	
10.30	220		[illegible]
10.32	150		
10.40	1450	321	
10.50		346	

165
157
322

No 2 10 Charcoal 100 in 200 pocket
5 Jar
4 Carbonate Iron
Before Clgn 2, 7 oms after 5.49

350	330		
4		Reversed to 0 –	
410	345	55	
430	350	165	Gaining Some
5	345	322	
520	315	432	
525		Reversed	Redog
850	600		Reversed Redog

No 3 10 Chan 100 on 200 100 at
5 Jan *
3. Carb Prod
Before Chgn & after 5.13

350	330		
4 —	345		Reversed to Ox
410	345	55	guessing some
430	350	165	
5	315	322	
520	"	432	
525	Reversed		Redog * Increase morning 4 Jan + 3 Carb Fa

Reversed No 3 to Redog at
840 360 guessed careful
Reversed to Ox
4 pm 590

No 4 10 Char 100 m 200 100 Ct
4 Jar
4 Comb Drew
Before Clgn 8. after 5.59

3.50	330		[illegible]
400	345		
410	345	55	
430	350	165	[illegible]
5	315	322	
520	"	432	
525	Received Railway		
835	360	541	
545	"	600	

396
145
541

145

350

396

560

396

No 5 10 Chan 100 on 200 100 Cat
4 Tar
3 Carb Iron
Before Chgn 8 after 5.27

3.50	330		
4	345		Reversed ox
4.10	345	55	
4.30	350	105	going some
5	315	322	
5.20	"	432	
5.25	Reversed	Rid	
6.30	210	until 7.50 pm	
8.10	350	~~750~~	
8.10	350	396	
8.35	"	541	
		600	
8.45	Reversed	Redeg	
8.45	560		
9	"	140	going

141
87½
2²

.540
25
700
1080
1350
600
270
1

(141

No 6 10 Clear 100 cm 200 100 alters
7 Tar
5 Sulphuric Acid
Before Clyx & after 6:8

350	330	
415	345	145
430	350	220
5	315	377
520	"	497

No 7 Char 100 on 200 100 albums
4 Jar
4 Subplate Jars
Before Chgn 7 after 53

350	330		
415	345	165	
430	350	220	
500	310	377	plate swelled
520	315	497	Subplate
6pm			Revised Reducing

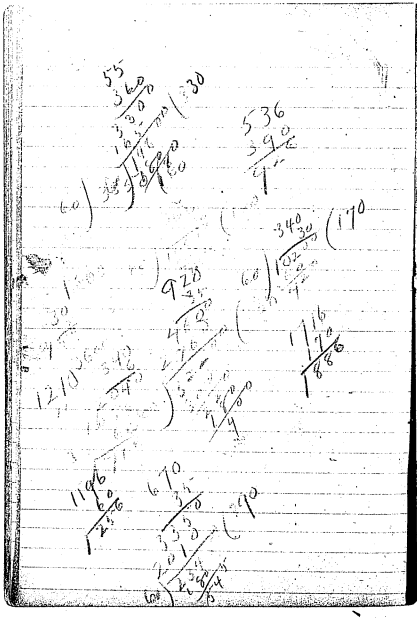
2532

7 – 20 on 100 – about 30
brushfla. tech. at various
times from Wednesd. to Tu
friday – 1st Reduction +

9am	420	
		about 2 cauliflower
		or 1266 matches to
		This shows that if could
		get 60 brushfls in
		could get 2½ cauliflowers
		420 –

No 2 - One of the 3 - that has been reduced twice & repainted. This is third filling about 35 bushfuls - 1st one -

9am	9pm	



VIII 7

~~6 15~~ and the peas twice
reduced about 30 broad feet

9am	920			
925	920			
935	670			
1010	670			
1015	360			
1020	360	1016		
1030	360	1076		
1035	360	1106		
1040	360	1136		
1045	"	1166		
1050	"	1196		
11	360	1256		
1010	"	1316		
1015	"	1376	1225	1886
1020	"	1376	1230	1916
1025	"	1406	1240	1996
1030	"	1436	1245	2006
1040	"	1496		
1050	"	1556		
12	"	1716		
1210		1796		
1215		1826		
1220		1856		

926 March 1 (266 March that dried plots dont count out)

only one small stalk scarcely pinkish

some little growing

scarcely any gas since

22 Cells 16 plates per cell
4 X 8 4 thick 1/8 pert

Weight of Hg	106 lb.
" 1/4 Carbon plates	38.8
Wt. of Iron 176 "	21.2
" 176 Carbon "	33.8
Oxygen	1.72
Wt of 20% Solution	126 lb.
Cap. nominally 6400 AH	Total 325 lb.
at .9 Volt 5760 VAH	

7.73 HPH.

without Cells or box

42 lb per HPH

325
71
70
40
526 lb

405 lb for 6 HP hours
675 lb for 10 HP hours

at .85 Volt on terminal of cell
gives 1.8 Hp rate of discharge.

Running column 3½ lb per cell - 77
Iron cells 50 lbs Wood box " 70 lb

2 3 4 on Reading They are 30 [illegible] 1st reduction
100 on 200 —

1 pm	920		
1 20	[illegible]	310	
1 20	650		
[illegible]	630		
1 —	350		
1 40	"	476	
2 pm	"	576	
2 15	"	663	663
2 20	"	692	
2 30	"	750	
2 45	"	837	
3 —	"	924	
3 10	345	952	
3 25	"	1069	3 young [illegible]
3 27	210	1079	[illegible]
~~[illegible]~~	~~210~~	~~1124~~	~~Reduced~~
340	210	1124	~~See other~~
415	200	1264	
7 742			no current —
5 —	200	1320	No 4 young right up
		1386	4 good back off at
			410 put it on 2

2 5 6 + 7 on Oxd

at 1 pm	930		
1 20	410		
1 20	650	310	
1 30	630	410	
1 32	350	~~476~~	
1 40	"	476	
2 pm	"	576	
2 20	"	692	
2 30	330	750	
2 45	330	837	
3 —	380	924	
3 10	345	952	
3 25	"	1069	
3 27	210	1079	No young
~~500~~		~~1124~~	342 not
Reduced Reading See other page			2 stand up on not 305
			5 young

No 7 – 50 in 100 – 30 [illegible] at max

Reversed to Ox wt

210	350		
215	"	129	
230	"	116	
245		203	
300		290	
Rev Reading			
215	350		
230	210		
Reversed Reading			
710	350		
805	360		
815	"	174	
900	370		
940	"	6	
Reversed			
950	340		
1000	340		
1030	320	186	

[illegible] Sulphate [illegible]

[illegible] Ox

[illegible] 350 ma [illegible]

No 1 [illegible]

[illegible]

1st [illegible]

499
174
673

370 60 / 60 = 6 (1 66

320
35
1600
960
112
60
52
4

499
174
120
499

5642 Rusted Rod

330	210		
340		35	
410	210	140	
~~445~~	~~2~~	~~260~~	No Current
445		140	
5		190	
515	200	240	
530	"	290	
545	140	35	
6	140	38 1/4	No gray color.
Rusted Rod			
750	350		
805	360	57	
815	360	1.14	
835	370	2.44	6 gaing
940	330	673	5412 OK
			6 Burnt 953 340 Rod
		700	2 gray
1005		810	

10 — 6 100 m 200 - treated
second time with Ferrous Ox
dis in NH_3 — pouring NH_3
on Ferrous chloride —

352	210		Reducing
410			
445			No Change
445	200	70	
5 —	200	120	Olive
520	"		"
6	190	306	very little change
603	220		
	Reduced	Ox	
750	350		
805	360	87	
10	"	174	174
825	"		234
835	"	299	
940		673	going full
	Reduced		Red
1	340		
10	340		
340	340	275	Sulphide NH
	this with		gas on Ferrous

Received Today

453			1105	360	
519	200	73		520	35
530	"	123	1120	520	56
535	190	139			
540		1575			
6 —	190 —	215			
03	215				
610	220	253			
620	223	290			
625	223	308	quantity very slight —		
625	223		Received		
735	210	250			
745	215	286			
Received		Reduction			
152	350				
[illegible]	360	73			
[illegible]	"	162			
[illegible]	360	222	quantity		
Received					
35	360				
Received	10	340	— Reduction		
	1010	360			

3+4 at 5 o'clock yesterday
Suspect the chlorde-uraide
had something to do with it
as it should have given a drop
look it out & put it in jar water
to permit chlorides deposit out
while put it back reducing
organism 1320 Matt colourless

NO3 ok			
5 pm	200	1320	Put 4 back today
530	"	1386	5.30 - good quality
540	190	1449	same
6 pm	190	1572	3 now yellow
603	218		slight 5.35
140	350		
335	300		
815	"	1174	both yellow strong

Both put to 3 on
get chlorides out

213

340

No 6

955	340		Reading
1010	340		
1035	300	213	
1110		383	

13 is the other plate treated
with Farrow in common
but soaked 3 hours in
water before putting in
cell —

950	320		Rising
1010	390		
1035	410	240	good slight [illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

Monday Morning after be
fully reduced Friday last
put on & I went 453 matt
then and only good on Ni string
Show there is some interference
with Chlority or something
I put new solution in Monday

$$\begin{array}{r} 115 \\ 320 \\ \hline 10 \\ 1152 \\ 115 \\ \hline 36\,800 \end{array} \quad (\times 40$$

60) 9000 (150
60
300
213
363

60) 12800 (213
120
80
60
200
180
20

No 2

10	340		Reckon
1010	340		
1040	300	213	
1110	300	363	good slight

156
125
311

No 5

1010	340	810	[illegible]
		Round [illegible]	
~~1010~~	~~340~~		
1010	340		
1045	340	156	
1110	[illegible]	[illegible]	[illegible]
1125	300	44	[illegible]

30 3/4

No 3. 100 m 200 30 bmelfe no
[illegible]
thus no 1 of the pair
[illegible] soaking effected
my — direct relation [illegible]
[illegible] to [illegible]
Vizelle no [illegible] 10 bmelfe
then [illegible] no [illegible]
times —
Received Rodney

1025	340		
1045	300	100	
		OK	

put [illegible] well [illegible] hand
[illegible] 8 35 [illegible]
Closed [illegible]

Among the chlorids were lower
and to gradually making
30 brine [ferric chl]
[illegible] don't work well
but the same number of
brine ful worked 1st 10 m
then [illegible] —
Soaked to get potash chloride
K out + then 10 more brine
+ same process followed
+ then 10 more work found
well, gave 750 to 800 watt —
The [illegible] will probably
be best [illegible] but [illegible]
time needed to decomp a [illegible]
Complicated to give porosity —
to absorb more — underwhelmed
Electro reduction not
necessary — it will require
4 or 500 deg as bright as
possible [illegible] only
Carbon —

No 4 same as 3
soaked for 1½ hours put
in [illegible] — [illegible] soaking
apparently [illegible]

Record Page

1025	340	
1045	300	100

No 16 was a [illegible] plate with about 20 brushfuls [illegible] time but I got it too high [illegible] was impossible [illegible]

1052	300		
1105	300	113	
1113	"	113	
1115	320		
1120	"	122	
Left	[illegible]	[illegible]	[illegible]
2l	[illegible]	[illegible]	[illegible]
"			

all on 1105 am

Oxdz

1105	370		
1120	360	91	10 growing bottle
1135	350	175	accidents growing
1145	350	233	4 growing 6
12 noon	350	320	16 term on shrink crack
1 pm	320	378	cont right along
110	320	373	16 growing bug
115	320	408	
120	335	426	
125	335	453	B 13 suddenly growing
130	335	480	X06 stable growing
135	335	507	on his pump slowly
145	345	564	growing
2 pm	345	650	295 not growing
205		683	2 growing 5 hot
			5 growing

Acetate Reosd ~~Rating~~ Ox

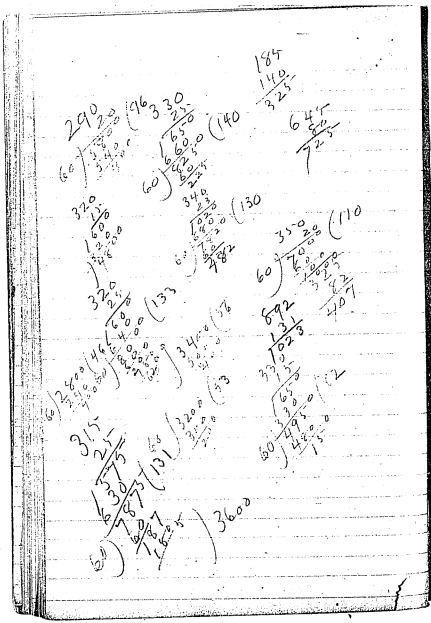
1135	350	
12		140 gas
105	320	Reosd Hydrogen
120	335	82
130	335	137

Solution gets wine red at normal – probably caused by too much previous Ox'dn I

faint gas on Ni prong at 130 – probably density too high

82
55
137

60) 3350 (55



Reducing

			Nos 3 4 13 16 6
1.37	335		
2 pm		7 tacklin ODS —	
2 pm	340	130	4 growing
210	340	186	16 growing
235	330	325	6 growing Delli
250	330	457	3 sulphur
300	320	460	
310	320	513	3 or 7 not growing
335	320	645	3 growing 7 not growing
350	360	725	7 still running
400	360	783	
420	350	892	
445	315	1023	Only 7 Running
5	300	1100	
520	290	1196	
530	280	1242	growing on ins

No 7 was healed with Not Sulphur
Dol been changed
3 or 4 times to get rid
Sulphur —

35
60) 2100 (75
705
600
4200
3

1490
75
1665

335
60) 13400 (220
12000
1400

3200 (53
3 1 2

272
3
325

Revised Reckoning

5 2 + 10

210	340		
250		220	← worse going
300		272	
310	320	325	5 + 2 very slightly improving
335		458	5 + 2 good [illegible]
			10 going

all acetic Fe –

In a row 250 deep
No 5 & 10 to 200 inch & fine 5 drops
from Saturday morning – Chan 10 Tan 4
3 pm monday –

No 1 6 & 13
to 100 or 200 Chan 10 Tan 4
5 drops from Saturday morning –
3 pm monday

No 4 1 & 3 to 50 or 100 – 10 chan 4 Tan
7 drops from friday noon to 3 pm monday

~~[illegible]~~ 7 – 0 x 0 l

~~acct~~ Rody

10	OX
2	"
6	
5	
16	"
13	"
3	"
4	"

350	370		
405	360	90	
415	350	146	4 good
425	"	206	
445	315	356	
5	300	431	13 good
510		481	6 good, 7 and dark
520	290	529	
530	280	575	5 fair good, 1 R
535	280	600	2 good, 1 faint
			542 Great, 6 fair
	No 10 good		4 neg

15
300 (75
60) 4500
420
3

315
15
5
315
60) 4725 (68
420
525

350
70
60) 6000 (116
420
4

350
15
60) 5250 (89
420
5

270
15
60) 4050 (68
420
5

320
60) 6000
420
4

Acetate from Ferric

No 20 was a 50 cm. 100 painted 7 times at intervals from Friday till Monday 4 pm — dried 20 ch hours on hot plate — finally put in a drying oven for 1 hour at 250 — then put right in KOH, about 2.25 grms increase weight

2 others are stuck in oven all dryness

355	360		Reducing —
415	350	116	
425	"	174	
430	330	203	
445	315	271	
500		346	very white gray on it
510		396	density too high & think
520	290	444	grey rather [illegible]
530	280	500	" shiny
535	280	525	" "
600	270	635	" "
615	320	715	
617	150		

395
65
460

14
2 50 g
1 1 0
2 0 0
3 0 0
60) 3 0 0
3 0 0

65) 1 0 0
1 0 0

150) 4 6 0
2 0 0
2 0 0
1 2 0
1 2 0
60) 1 2 0
1 2 0

40 Sprinkles

10 - 7 - 2 - 6 - 5 - 13 - 4 - 40 - 16
Reviewed

540	300		~~Study~~ Relay
6	270	90	
613	320	170	
617	150	170	
745	150	395	2 6 4 5 ~~[illegible]~~ 13
746	280	395	4 going little
8	280	460	3 very slight
			7 + 16 not going
			10 gr[illegible]

646
67
13

60) 2800 (46
240
40

270
15
1350
270
60) 4050 (67
360
450

Transf

No 3

Sulphide UH in
Changed Sal 3 times

535	~~280~~	6.00	Oxdz
545	300	646 -	
6	270	713	
615	320	793	
617	150	~~1000~~ -	gasing
745	←	1000	

60) 15000 (250
120
300
300

250
60
15000
360
900
900
3

26 – 10 100 on 200 10 char 4 lar
Dosed with Mixture Ferric Acetate
only once Malassez's Lake
dished only 1 hour past
reylet in KOH

weighed 5 grms
Redmann

600	270	
615	320	80
617	150	85
745	150	305
747	280	
8	280	365

4° 300 (2
60 | 120 60

340 (170
60 | 170

340 (126
60 | 102 60 42 0

Ortg
10 – 2 – 6 – 5 – 13 – 4
Rudeq
No 3 –

805	320		
845	300	200	
915	340	370	4 & 13 gauge
920	340	400	6 gauge

460
186
64

320
335
160
960
112
60) 116
560
4
(.166

No 7 -

8	'280	460
835	320	646

31 Charcoal + Sulphur 72 grms

915	320	[illegible] - Charcoal lower Temp + probably CO_2 direct combustion

32 Flake pb3o4 + Sulphuric Fe grid

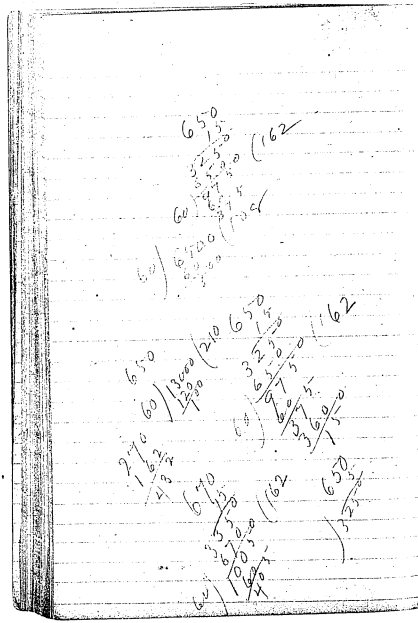
		Reducing
915	320	
940	650	
1015	650	512 gassing
	Reversed	602 Oxdg
1025	650	
1045	"	210 no go
11	"	372
1110	"	480
1115	"	534
1120	"	642
1125	"	750
1130	"	858
1140	"	1072
1150	"	1286
1152	Reversed	1300 gassing
1152	650	Reversed Reducing
1205	670	140
1210	670	195

Monday 9 40 pm

Soaking — Jar No 1 Contains No 5 6 & 2 which are of same [illegible] about —

Jar No 2 to 100 in 200 — No 26 treated 10 Grains of [illegible] Opening mock & cut [illegible] & partbright in [illegible] [illegible] [illegible] shown and steam plated — Short apart out — has about 300 [illegible] 4 in —

Jar No 3 Has No 13 in it



33 Ferric Sulphate Oxdg to Ferrous on dish he had over 50% — proceed with Dixon plate on 24' grid —

1035	650		Reducing
1050	"	162	
11	"	270	
1115	"	432	
1120	"	540	
1125	"	648	
1130	"	756	gassing very slight
1135	"	864	
1140		972 — two	
1150	"	1188	Reversed
1150	650	Reversed Oxdg	
1205		162	
1210		217	

34 = Duron pbq + Opaline Shrimp pkd dry

1120	650	
1140	"	432
1150	"	648
1150	650	Burned - Oxdy
1		

34 — 36 volunteers Dry Fly w by hat — 33 + 32
all left Redmoney at 1230 on (Am)
170 ma — in morning 160
8 hours 30 min
1360 mah —

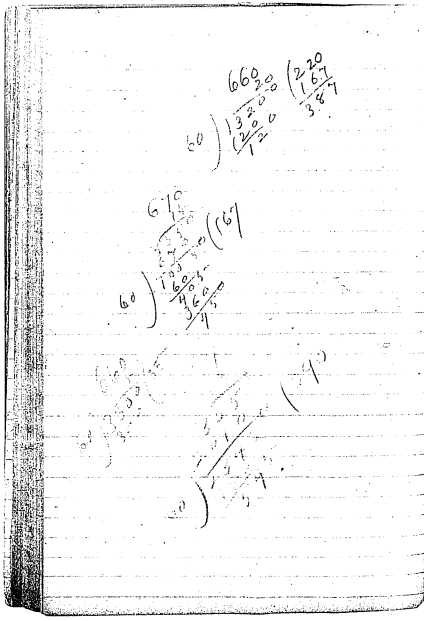
6 x 9 —

10	680		all but 34 kept going quite strong after
21	680	170	
35	660	280	Current was off a little
40	660	335	going 10 minutes after you
45	"	390	34 stopped w/ 1/2 volume after starting —
50	"	445 x	With C on 680 ma
10 —	"	555	all but 34 you stopped after being on 5th hour —
15		665	
15	630	720	34 435 you were going
20	"	877	Notice that 34 436 on opening after 3rd you stopped —
			938 Reversed 34 436 Riley
			33 you were Reversed Riley 10 on 440
			32 you were very slow

38 — gold with Pb 90 or Protoalbumite Iron

957	660		
1015	630	190	
1005		390	

10	630		
10 20	"	210	
10 25	"	245	
10 30		320	
1035	600		
11 —	600	230	
1105	600	300	
1125	600		
11		310	
1210	600		

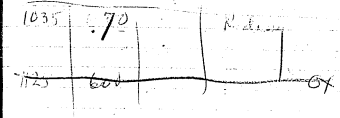


39 (1) supplement in battle
+ Plays

Reduce

1020	670	70	
11 =	260		Ox
	660		
235	680	Ox	
250	670	167	
310	660	3/87	
315		#42	
320	640	Reduce	
325			

34



36

1035	600		Red	
1125	600		Grd	A Type
14	"	2		
52	600		Round Red	
22			16	
1				

40 [illegible]

[illegible]	7		

32 - Reversed Relay F.S. Pb90
3/5 Mult on 0

1135	640	Reversed Relay			
1110		550			
1115	"	4			
1120	"	450			
1125		500			
1130	600	550			
1135					
1140	600	550			
1145	"				
1150	"				
1155			230	660	545
1100		500			
1105		450			
1110		450			
1115	650				
1120	650				
1125	650	612			
1130	640	646			
1135	640	745			
140	650	Reversed Relay			
145	630	213			
210	670	223			
215	670	227			
220	670	227			

OVER

32

235	680		OX
250	[illegible]	.167	
3	[illegible]	280	
320	640	493	
330	640	599	
335	690	650	
340	620	700	
340	Revised		Redeg
340	600		

.00 MAH 430

1.9 Met 7c

41 [illegible] Empty 4.5
full 10.7
6 grams [illegible] FeS
Ptwo 200 m [illegible] flake p670

1.00	640		OX
Reduce	at		
155	650		
214	650	Revised Redeg	
355	670	OX	
315	660	220	
320	640	275	

650 30 | 323
167
492

60) 19500
16500
12000
1500

12
48

121
48
7.3

42

FeS - powdered thru 200
grid empty 4.8
filled 12.1
.7300 of mixture of which
7/10 is FeS + 3/10 pbpo

205	670	OK
235	680	Redoing
250	670	167
320		492
325	640	547 quasing slight

$\frac{12.2}{0.39}$

2.16 grams [illegible]

43 FeS powdered thru 200 mesh
Empty grid 4.3 filled 12.2
.7900 mgms of which
8/10 FeS 2/10 PbSO4

205	670		ox
			6.48 grams FeS
235	680		Redcy
250	670	167	4.12 grams Fe
320	640	492	
330	640	592	not gram
335	620	642	gas [illegible]

6.32 grams purchased iron

Thus is best so far

700 mat on ox 6 [illegible]
grams
Thus after 4 ox Redcy

Bret 39 which is next best they have less [illegible]
+ may be better

441
83
524

256
247
535

(183

60) 5000
4800

670
25
535

(279

630
120
510

(210

5000
4800

60) 1670
1200
470
420
50

60) 1200
1200
420
420
0

30) 1200
1200
0

(256

25
505
500
60) 1250
1200
5000
4800

(208

2401
1340
1061
60) 1340
1200
1400
1200
200
180
20

9) 1612
1605
7
1222
1215
7
1855
1848
7
1260
1253
7
1695
1688
7
1289
1284

5363
607

gm 6.8
filw 16.9 – Hg 7 gm Pbjo 2 gm

44 ½ HgO ½ · graphite

227	660		Redeg
290	670	256	
315		535	
335	620	745	

11.9
5.2
6.7

6.5 gm 210
80 | 1.5 gm
1.2
1.3

45 — grid Empty 5.2 Dry
full 11.9
FeS 20 on 40 mesh
proportion — 7 grms FeS 3 grms Pbgo of
of the 6.7 grms total —

3pm 320	6.70	210
322	6.42	Reading

24 — [illegible]

640
15
3200
640
(160
60) 960
3

46 Same as 45 Except wet with KOH when packed —

315	660	
330	640	160 –

Bottle Empty Wet 6.3 g
" filled 10.5 "
Brunnorstein 8.— "
Plumbago 2 —

47

gtd 6.32
Lessels 10 5
Proportion 8 of BromOXF2 Merck
2 Pbgp

355 | 864 (240
710
540
1320
1320

165 | 1045
50
115
110
50
40
40

206 | 2000 (97
1944
56
56

206
3

94
93
1
4
4
16
16

Hg 48

grid Empty 5
Loaded 16.5 — 15 / 48 to 30 day for utility

Proportion of grms HgO
2 " PbO

This has asbestos on top

9.4 grms Mercury Oxide on HgO

8.64 grms Metallic ?

2.4 amount of O to be of
Calculation are right

107
6·6
5 | 4·6
92
3
2·76

grad Eq — pt 6·1
filled 10·7

49 — precipitate 3 of moist ferric Hydrate
2 of pt Eqs —

2·76 grms Moist Hydrate

55

50

grd empty 4.8
full 14.8
proportion of Mn gram to H_2O
plus

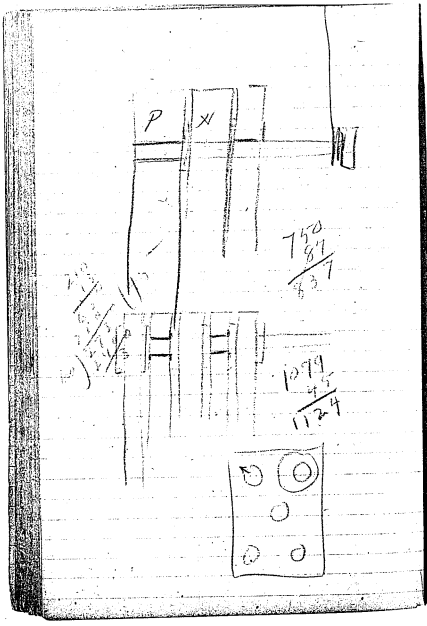
6.66 gm MnO_2
5 gm MnO —

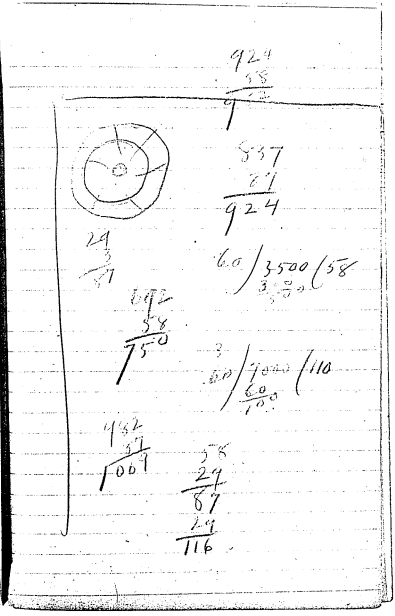
51 grid [illegible] 6.6
full [illegible] 11.2
Prop [illegible]
5 of Mount Mn S
2 [illegible]

F2 Mrs made big frying Pan
with sulphur
pb90

pd Lunch 6.8
full 11.4
Mrs 5 pints
pb90 2 pb –

53 — MnS. made by Reaction
$Dried\ H_2S$ [illegible]
propties 3 MnS & 2 [illegible]


P
X
750
87
837
1099
45
1124


924
58
837
87
924
29
87
60 / 3500 / 58
692
58
750
3500 / 110
932
57
1009
58
29
87
29
116

208
6
374

500 (291.

60) 5200 (

374
46

(145

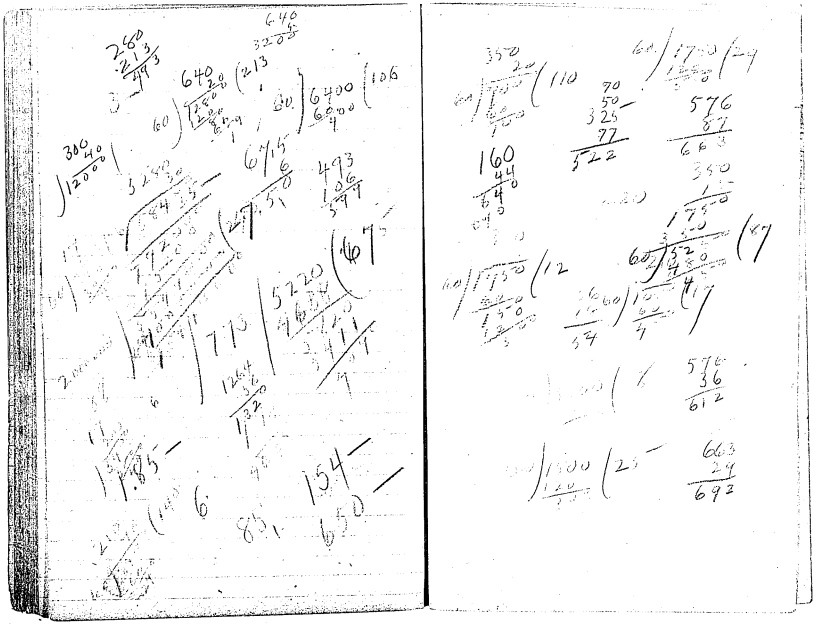
3400 (56

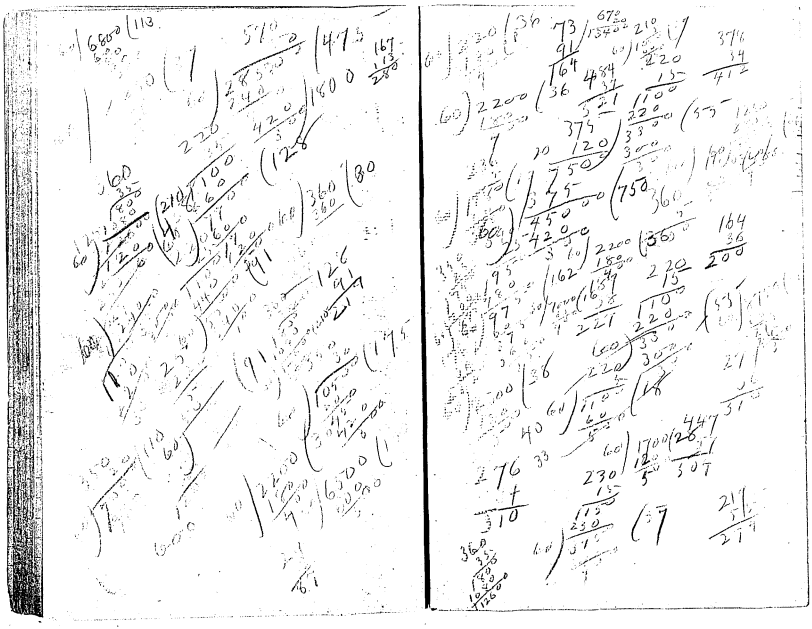
29
116
376
672

120
20
60) 1860 (10
180
60

360
30
60) 1080 (180
600
480

350
60) 600 (110
600





Notebook, N-00-12-05

54
69
128) 590 (46
512
78
76
2

5

3500
46
2100
1400
1600

53 – to MnS made by Rufin
~~Eq~~ in atmos of H_2S – p 690

gives nothing with F_2 –
I have been trying it out
now and [illegible] with
well [illegible] [illegible] –

Cant make it go either
way it gives 490
500 M/ah on O or H
due to Sulphur

1.3) 2.9 (.615
49
8.19
0.53
2.30
9
35.

54 grid Empty 4.9
full 1.2.9
9 pts Hyo 4 pts 1.6.9
flank

5.53 Hyo

good deal came out
on H-gassing
Dont dig up
again only 1/3 what
I claimed

12.7
4.2
.3 | 8.2
7.0
1.2
.3
.27
.06
9

55 9.15 Empty 4.15
full 12.7
H_2O - 9 pts PbO_2 5 pts
5.2 H_2O
good deal Come
out and H growing
Dont Ox up again so
to Shoot $\frac{1}{3}$

56 — grid empty 5
filled 7 12.7
Hg0 9 parts Pbgo 6 pts
flake

4.61 Hg0

Came out heavy on
this. Cause there
was more pbgo

12.7
2.1
7 | 5.15
1.5 | 4.61
1.5

133
48
13 | 657
~~8~~
~~7~~
~~6~~
~~3~~
~~5~~
~~3~~
~~5~~

57 qrd Empty 4.8
full 13.3
H_2O 9 pts PbO_2 4
Electrolyzers PbO_2 —

5.88 H_2O

All Concentration
for gassing

152
60
12 | 766
840 | 6.9
9
120

58 grid Empty 6
full 15.2
HgO 19 pts PbgO 3 pts
flake —

6.59 HgO

nearly all came
out with
grossing

59

grad empty 5.4
full 13.3
Hgo 4 pts Cobalt Thio 200 III 4 pts
Mg Cinnamon-red

all came out at
once when it
guzzled mtt

20 is the old Hg Carb plate
where used Hg flat + several
filings, the results

This plate on Oxdg is good
for 1300 mah — but towards
last density above 100 causes
slight graying on Ni prong
100 don't cause gas at 1300 mah,
+ I think last dose gave
plate was never reduced
gas then plate well
gave more + even if not
so, a lower density well
give more than 1300 +
Dec 5 1900 TAE

60 – Ferrous Carbonate
dried in CO_2 gas
ø grid Empty 4.15 –
full 8.13
7 pts. FeCarb. 3 pGqo –

Vanadium [illegible] in Carb plate
darkened red by H in Cell —
but O2 days up with Hg
plate against it NO VALE
with Zn — goes down to 244
Closed 146 open —

Old Antimony Carbon plate
against Hg | 78 closed
90 open | 1 min
in 5 min 72 closed | 84 open

The Rechum holder was
all black showing that
antimony is somewhat
soluable in liquid —
10 min 66 closed | 80 open —

Ten in Carbon

82 closed 99 Open

1/2 min —

5 min just same 450 pm

closed	open	
450	82	99
455	83	96
5	82	98

Nitrate Uranium in Carbon plate

	Closed	Open
507	82	100
513	74	90
520	68	82

Bismuth Nit in C plate

.44 closed 50 Open

Nit Cobalt in C plate

	Closed	Open
1/2 mm	62	82
5 mm	57.5	64

Uranium Oxd acts as
fair depolarizer but
not for any great length
time — different salt
Uranium Nitrate Nitrate gives
dif results —

Co acts as good depolar
but only for little while
if overload it has great
amperage on reducing
plate 1.3 to reduce
12 brushfuls Nit Co
it dont take 50 ma
or Ox —

Bismuth acts as deflyr
a little while —

Dec 8 1900 708

Nickel + Cobalt both act on placed of H_2O as reducing agent on Iron

Iron + Cobalt as best Nickel next – and Iron from Ferric reduced to Ferrosoferric as next owing to weight etc as is probable that Co will be cheaper than Hg as depolarizer

Iron compared to Co + Ni is quite poor –

I have made 3 Carbon plates Each soaked in following treated 3 times as 1.20 between

3 plates with plating Ferric Chloride,
3 " " " plating Nickel "
3 " " " plating Cobalt "

OVW

Saturday evening the 9 plates 8
put on Current,

2 of each reducing + 1 oxidg

Wt of dried Cobalt plate shows
4.6 grms dried chloride
Nickel plate shows 7.4 grms
dried Chloride –

On pulling on Ct The 2 oxdg
Ferric chl Colors are red –
great many sprouts the one
Redcg don't Color + not many
sprouts – but ox poles grow Redcg not

The 2 oxdg Co plate browns solution
very little some sprout + both
grow – The reducing plate has
little bubbles coming out but
don't grow on the shoulder

The 2 oxdy plates of Nickel
both gas in Ni hydr.
Solution clear – sprouts moderate
Redy plate has more sprouts
Sulphur clear no gas at all –

---

42. with new Ni plate 3 gms Ni
on discha about 380 mah –
both cases changed to gassing
9 now put them on chdg with
1 Lamp + all Ras plugs out
perhaps 50 ma – all day off –
Sunday

No 39. is charged about 600
Milamp hours –

No 43 was oxdy when it
put it on for the night
1474 mah reversed at 6
running at 6.55 pm
43 Monday (Redwood) fully has
700 mah –

61 is anhydrous Sulphide of Cobalt made by Ramsay by using Metallic Cobalt + Brimstone in a Crucible, powdered & screened through 200 mesh

Grid Crucible 4.9
filled 10.0
3 of Sulphide
+ 3 pts of PbO_2 —

freshly made Mudlake should have been 7 of Sulphide —

62 Sulphide of Nickel in powder found in bottle
grid early 6 –
full 11.5 –
7 pts Sulphide 3 pts graphite

3.51 Ni grms

after Nit acid treatment does gives
Some results on page – 20 & 30 mals –

63 = Sulphide Cobalt made
from metal + brimstone in
Crucible Cap Reduc-
Grid Empty 5.2
Filled 13.
7 pts Sulphide 3 pts graphite

Tungstic
~~Molybdic~~ reduced hydrate deposit
HCl 4 pt. on Comb plate
Recd from Oxdyd gave 110 ma -
.44 V. Closed .16 Open
after 5 min with
Iron as Oxdyble Electrode
Solution was weak

Molybdic acid (Hopkins) dissolved in HCl + Oxalic Acid Cat (on Carbon plate)
gives at first
{ 200 ma .80 V closed
{ 1.02 V open

solution was weak

after ½ min .140 closed
100 ma .58 Vdt. open

strong Sat GrCl on Cardplate
Red Thm Oxy
gave 180 closed 150 Ma
1 rubl open —

after 15 min about same
as WO + MO —

Ferrous Cl with Ferricy
K put in after in Carbon
plate

170 ma -.74 V clsd 1.04 open

5 min after Clsd .47 -.68 V open
105 ma

64 + 65 is Sulphide Nickel
200 mesh Wadenberg
Ruffn —
7 pts MS 3 pt 90 —

Cab – Disulphide Nickel from Carb
+S with Sensible insoluble Residue
Good Empty 4.9
Full 10.13
7 pts MS 3 Graphite

67 - 3rd Run.

1025	223	95	118
1030	203	86.3	108
1047	150	63	102
1153	132	56	100
1114	100	42.6	94

off

am going to reduce it

4th time

443	224	86	117
450	154	66	102
523	104	44	90
535	83	35	90.5
545	70	29	80.5
550	90	38	100
600	75	32.5	90
625			

changed F.a

off

This has improved

look forward for the last 5

67 Empty 41.3

Tube 7

Carbohydrate meal.

7 pts Phyo 3 pts

time	a	Vclad	Vapor mah
925	260	96	123
930	220	84	106
935	210	74	103
940	183	71	101
945	178	66	98
950	160	58	94
955	140	52	92
10 —	128	46	92

Been on all night Co 111.6 a- 104

off

815	265	98	130
820	237	88	114
825	222	82	110
840	170	63	106
852	150	46	102
9	100	37	85 to 100

134 mah

3.910

Ni 03 - 50

Mn 03

3.91 grms

35.19

1.35

351

1.35

29.15

270

3.91

Mn 03

114

35

1.50

166

1.028

166

1.194

71

29.15

114

46

166

1168

1.168

1.160

ground together both
charge 67
68 - Cart Ni 7 pts Pb go 3 pts
grid empty 4.5
filled 7.2

This works OK only trouble
is the bulk —

351 milgms O available —
ad O to .3 for amp hours
should get little more than amph

Time	am	V closed	V open	ma
827	265			20
832	238			20
837	228			40
842	220			66
853	174	64	108	101
900	160	59	101.5	120
905	148	54	100	132
910	138	52	82	143

off —

on recharge stands 400 ma at 15 ft —
about [illegible] amount 72 grms

68 2nd time -

1014	220	80	102	
1023	195	68	84	changed from for new one
1024	235	86	120	needle of Altitude stick
1030	212	74	108	
1040	178	66	108	
1045	160	58	104	
1055	140	52.2	80	sat in 2 sec when 104
11—	132	48	86	114 max
1107	122	45	84	125
				133 off

3rd time

325	260	111	140	Been on Low Oy. Lt
337	193	82	126	24 to 36 Hours —
345	162	69	108	
4—	140	59	94	
405	127	54	92	
415	113	48	84	
430	90	38	74	off

69 Carb Nickel fancy ground
with plugs

Grd Empty 4.9
full 7.9
3 of Carb 3 plugs

70 grid 4.8
filled 8.1
Cobalt Carb 7 pts phosp 3 pts

$\frac{3.7}{1.85}$ = relative Ni

71 grid. Empty 4.8
filled 8.5

7 pts of Ni Sulphate dehydrate partially to yellow + 3 pts. pyrogallol

1.85 met Ni after water was off

72 nitrate Ni heated in Evap
dish till black & nearly all
nitrous fumes off.
Empty 5.1
Full 10.5
7 pts of Bl to 1 H. Ox. 3 Graphite

073. Anhydrous OX. Ni
grid Empty 4.15
full 11.9
7 pts OXNi 3 pts Pb-Sb

poor

74 grid Empty 4.5
full 81.9

ppm - 1/2 acetate Nickel 1/2 ppb Co

4.4 of mixed stuff in
Reduced all into Run of

937	225	80	106
944	180	65	90
953	165	58	82.4
1006	155	55	78
1019	142	50	73
1020	65	23	36

Moistened with KOH —

75 — grid Imp 6.2
full 10.1

Acetate Nickel 3.3
pbgo 3.3

Original wgt weighed 6.6
after washing 6.9 —

Burn on 500 mah reducing the part to form 0%

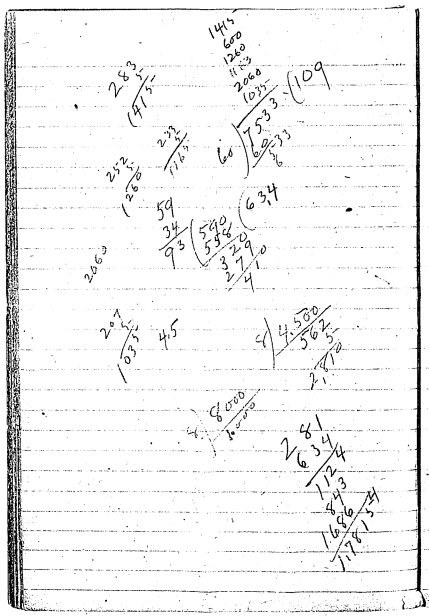
915	238	84	118
917	200	70	102
930	170	60	82
935	125	44	70

2nd

240	192	82	120
253	160	68	104
310	145	62	96
317	115	48	78
320	160	68	84
325	128	54	76

Changed to fresh Fe

Off



76. grid Emp 4.5
full 9

Dried Nickelhydrate, gentle heat on brix over steam plate,

Nickelhydrate 5 parts
p 6.90 — 3 pts

Moistened + KOH — Orig batch weighed dry 8 after wet 9 gms

Nickelhydrox .634% —

4.5 gms in grid of which 2.81 Nickel oxide

1.78 grms Ni metal leaving the KOH out,

160 ma at dont gain on Ox

1020	292	104	
1025	273	98	132
off 1027 on 1050	260	82	128
1055	246	88	123
1100	220	80	112
1110	208	72.4	106

76

1015	207	74.2	106	109 mah good
	on other tube			2nd time — new Rox
910	200	108	112	
915	188	91.3	112	
920	182	91	112	
925	Has been			during this 5 min —
	Enclosing	Reads		
925	210	90	112	
930	200	84.3	118	
935	197	82.3	108	
940	193	82	108	
945	190	80.2	108	
950	off for these			5 min wrong plug —
950	201	84.2	112	
1005	187	78.3	106	
1010	183	77	104	
1020	179	76	102	
1025	177	74.4	102	
1030	174	74	100.5	
1035	173	73	100	
1045	170	71	98	
11 —	160	68	96	306 mah —
1108	216	92	124	put in new Fe 1108 —
1120	120	50	80	
1122				off —

77. Nickel sulphate from acetate Ni
good supply 4.1
full — 8.3
1/2 NiS 1/2 pbSO4 —

Sulphide was a little moist when put in

125	232	86	118	
130	150	54	94	
130 —				
135	110	39	80	changed Fe but made it no diff — off-going to Reduce it + ReOX —

232	200	86	112	
240				209

78 Ovinly Ox. 7 pbyo 3

Grid with thing ni pierced with needle
Under pled hand

Empty 3.1
filled 12.9

Wet with Roth —

on 340 ma ox d qus — 3 x 4 mm —

	a	V clsd	V open	
115	250	81	122	
120	173	63	90	
123	100	56	52	off — 2
225	215	91	114	
230	110	84	60	Offing

$$\frac{63.4}{37.8}$$

$NiCO_3$

59
60
119 (59.5 (59.5

NiO_2H_2

$$\frac{59}{37.4} \quad 93 \quad (59.5 \quad 59.5 \quad 63.4 \quad 37.4$$

$$\frac{3.7}{1.85} \quad 50\%$$

79 grid Graphite 4:1
full 10:3

6 Nickel Carb 4 graphite

The Ni Carb was first ground very fine then graphite put in & ground together dry using fine file & then wet with ~~Rocka~~ & ground long time so whole looks like pure stuff — no blue Carb can be detected under micro — Ni sheet over asbestos put in 1240 no Ct which will be on at 1 about 105 ma — I use low Ct as cliff and fall out by grid holes —

3.7 grams ~~Carbon~~ ~~[illegible]~~ ~~[illegible]~~

50% wet nickel 1.85 grams

Net Ni —

8—	202	74	122
807	158	58	110
812	157	59	108
820	152	57.5	107
825	150	56.3	106
830	150	55	102

837	100	35	60	
				2nd Run
1140	175	76	118	
1155	160	67.6	106	
12	155	66	104	
1220	149	62.4	97	
1250	128	54	87	
1	120	51	78	off

80 grid Sample 4.8
(filled) 10.1
7 pts wt. $Na_2O \cdot 5H_2O$ + 3 pt 6%
Na_2O_3 peroxidized — by Hypochlorite

Works weathered Chg Yutson disc out
The stuff was not ground

603	252	92	118	
610	200	70	110	
615	183	67	108	
620	175	64	108	
625	160	57.6	105 @ 6	
630	140	52	102	
631	170	62.2	120	put in neutre
635	120	43	90	
		off		
				2nd Run
930	220	93	120	
935	190	80	107	
950	163	70	106	
10	153	66	106	
1010	145	62	106	
1015	142	59.8	104	
1030	130	55.3	102	
1034	120	51	100	off

81 phosphide Ni. made by Ruff with Ni + phos; Hzat

grid Empty 4.15
full 11

7 pts phosphide 3 pts P690
mixed only

It's known that it works only have to get phos soda bub guess

210	200	86	110	
1.25				Ng

11.9
6.0
5.9

59.0 / 12.9) 599.0 (45.
4 9 0
1 0 9 0
9 0 3
1 6 2 4 0
1 8 2 7

82 – Anhydrous Chl Nickel –
Refurnished to "Burn" 3 grams
grid Empty 6.0
filled 11.9
7 $NiCl_2$ 3 H_2O
Mixed Dry

45% Ni – 1.82 grams Ni.

T	170	72	98	
1	225	94	117	New Fe.
110	190	81	104	
115	185	78	102	
120	180	76.2	102	
125	175	75	102	
135	172	72.8	102	
140	170	72.3	102	
218	100	40	70	

off –

88 grid Empty 4.5
filled 9.9

Dried in Prof. Michel 9 pts 1/2 pts
photographers pbgs —
afterwards wet + ground until it
all looked like pbgs —
Weighed 12.2 wet — & gave of 1.7
grams —

large quantity fine material
fades out + it goes at once —
Ng — all comes out
grid.

84— grid Empty 4.8
full 10.5—

6 pts dried Nickel Hydrate
1 part phate pbgo ground together
fully while moist with KOH,
2 parts flake pbgo mixed with
above 60 fumes

No fume material falls out
dont gas — This shows value of
flake pbgo for holding fine
stuff — & for porosity | or
Contact as against 83,

with Cement all comes
out —

No

85 – grid Empty 4
full 9
6 pts Ni Hydroxide dried
100 on 200 mesh
1 pt photo phlo
2 pts graphitized.
Photophlo mixed wet (KOH) with
Ni by fingers & finally
graphite added — mixed
fingers.

Some comes out & drawn

915	212	90	118	
923	186	78.5	106	
930	177	74.2	103	
940	176	70.6	100	
950	167	70.5	100	
955	163	69.8	98	
10 –	160	68	97	Had to take it off weighed grid —

3rd Curve on 76 — showed just through at about 800 mah

435	223	94.2	112	
450	203	86.2	108	
455	200	85	107	
505	198	83.4	106	
510	197	82.3	104	
515	193	82.1	104	
525	190	81	104	
540	188	79.8	103	214 mah
550	184	77.6	102	"
600	180	76	100	275
610	177	74.3	98	305 "
620	173	72.7	98	334 "
630	167	70.3	98	362 "
640	140	55	85	
640	changed	grow		a pound of feathers 4 lb
on 745	170	71	110	410 mah
800	100	42	63	It evidently got the grow
805	100	41	64	
812	99	41	64	
815	98	41	64	435
820	98	41	62	
825	98	41	62	450
830	98	41	62	
835	97	40.5	62	466
840	96	40.2	61	

76 Continued

845	93	39.3	60	481
855	88	38	58	496
900	83	36.5	55	
910	60	22.2	44	517 MAA
				Off

on all night about 50 m

145	232	98.3	120	
153	203	87.8	107	
300	177	76.7	101	241
310	170	72	96	
310				new prow
310	192	83	116	
315	110	47.5	60	
320	105	47	64	289
345	97	42	60	330
350	96	47	60	
355	94	41	58	346
4 —	92	40	57	353
410	90	38	56	
424	74	32	50	373
430	59	26		
440		Zero		

86 grid Empty 4.5
fuel 10.5

5 grams Ni Hydroxide dry
Moistened it & pressed weighed 6.4 g
after washing — 100 or 200 mesh
gas come on closing ck & some fine
stuff comes out perhaps 9 fried
it too much so it wont stick
Together — No graphite —

Considerable comes out
if he had been put on little
dampear (10) Hyd. of Ni
dried quite as much &
probably would have been better

1005	210	90	116	changed Fe
1007	235	99	126	
1010	203	85	116	
1015	120	49	106	
				Off

87 - 2nd Run

good

104	308	78	114	4th pag
110	270	69	104	
115	260	67	102	
120	255	65.3	100	
137	237	60	95	
145	228	58	92	
152	220	56	90	
213	192	48	80	
215	188	47	79	mah-
225	180	46	74	350
230	178	45.2	74	
240	172	44.1	72	392
245	170	42.8	72	406
245	290	73	112	new 9 from No 32
248	273	69.5	106	
250	260	66.3	103	428
255	254	64.3	101	450
3 —	247	62.7	100	470
305	238	61	100	490
310	180	46	82	
315	150	39	74	521
320	150	38	74	
325	144	37	70	546
330	140	36	67	
340	130	34	63	568
350	102	26	45.85	587

87 Been Reduced & Re Ox

on old pin 3rd run 74 V below + 70 ma

43 V · 110 ma all 3rd pag

100 ma 43 V old 3rd pag

87 grid Empty 41.4
full 9.1

Dried Ni Hydroxen
Ilmo 100 on 200 6 pts
flat Graphite only 3
Dry

3.52 grms
4 pmt

Seriously of any Comes out
grid — 2.23 grms
not Made

1017	224	94.3	120	
1025	200	86	110	28.488
1030	199	83	103	44.89
1037	195	82.3	106	67.87
1045	190	80.2	104	93.54
1050	189	79.8	103	109.33
1055	176	74.3	102	124.54
11 —	125	52	86	137.09

theoretical 1.11 amp H
9.1 ohm
9.6

Amp/hour

87 – 28th 4th peg

245	354	91	138	
255	288	75	112	
315	262	68	104	145
340	250	65	101	251
350	247	64.5	100	292
4 —	243	62.7	99	333
415	237	61.2	98	393
430	223	57.8	96	452
450	137	35	70	512
500	133	34.2	67	534
503	130	34	67	538 Opened 502
523	157	38	75	" Recharged on 523
535	116	29.2	60	565
545	42	10		578 off

Off for the night to be reread in morning
am both pegs out.

805	65	18	40	before pulling Ct on it was 120 – dropped in 5 sec to above –

88 Grid Empty 6.2
full 9.9

Dried Ni Hydroxide 6 pts
Coke through 200 mesh 3 pts
wkd Dry Ni also thru 200

ng Comes out.

89 — qrd Empty 415
full 99

Dried Mn Hydroxide — 6 pts

Coke 30 on 60, 3 pts

pkd wtr

Some of the fine stuff comes out,

1118	235	99	120	
1119	200	84 3	106	
1132	85	36		off

90 grid Empty full 4.7 9.12

Ni hydroxide not quite dry — 6
when powdered got damp —
Coke through 30 on 60 mesh 3

gases nearly full apparently when 1st put on — nothing comes out,

1133	228	94.3	117	
1140	180	76	102	
1145	75			off —

91 good Empty 6.2
fuel 11.2

Mi Hydroxide very dump 6
graphite 3

Scarcely any Comes out
good rather too much for 130 ma
to out —

1115	214	90.7	109	
1130	177	75	90	
1140	154	66	80	
1212	137	59	72	153
1220	136	58	70	
1220	210	90	114	New Iron
1230	185	80	105	
1240	183	78.3	104	234
1245	180	77.3	103	
1255	174	75	102	263
110	100	44	66	290
120	97	42.2	63	
130	74	32	45	312
140	22	9	8	320

off —

91 2nd dis

950	227	96	120	
10 —	200	84	103	
10 —	*400	59	102	dummied Rec 4th pay from battery dumped
1010	385	56.4	100	
1020	360	53	97	162
1036	320	47	93	252
1052	173	26	62	317
1108	144	22	50	~~37~~
1120	80	12	30	357

on 1st pay 42 V 12 ma
at 12 min 1st pay 60 V 34 ma

92 grid Empty 4
filled wet 9.4
when dry 9.1

Mickelthy not perfectly dry — KOH added also.

Weighed before KOH put in 7 pts (at dens 2 damp)

~~Phosphate~~ 3 pts —

~~Dried 9.1 on 81 mm plate 62 mm mag~~

It did not give when put in solution — put out in little field out showing that, the hydrate must not be dried hard but only down to damp — passed on 340 ma — a little for 150 — all night with all pays out,

915	236	99.8	120	
1020	100	41	64	abt 180 mah

92

93. grid Empty 4.6
filled 9.8

Hydrated Peroxide Manganese 3
Graphite 1.5

Hydrate wet 7.2

took up moisture and KOH 20%
gave little or O Considered Red —
Oxdy —

94 grid Empty 4.5
full 10.2

Nickelhydrate by pp in boiling KOH
stirring + drying on perforated plate,
Very damp when used so after
mixing with graphite is more as
wet as not more so than when used
used KOH as Dry material,
Ni Hydroxide 7 parts
Graphite 3 parts

Y wint reduce on H but O2 OK
but with density less than
100 ma + then it gases slightly

95 = Wet 1/2 dried hydrate Connecticut Albany grease — mixed with graphite & worked together then dried on porous plate then when semi dry mixed with little fresh graphite & packed — grease 3/4 full only —

grease empty 4.5

filled 8.5

1213	370	94	130	4th peg.
1215	334	84	120	
1223	280	71.4	103	
1233	257	66	102	
1245	137	35	62	136 wah

96 — Sponge Ni by the Current
Double graphite — moist
Empty grid 4.5
full 13.4
only 1.3 grms ppt on grid

1246	305	78	104	4th pag
1252	247	63	90	
1.02	45	12		

97 – most hydrate dried only on tile
mixed with Coke. 100 on 200
pressed hard so each particle
Coke presses thro soft hydrate
& makes Cal'd –

avd Empty 4.2
fellow 7.8

very poor –

12.07	250	60	132	
12.12	80	20	60@80	off-ng

67- 5th Test been reduced + max 2 or 3 turns, on all nite

4th plug

Time	ma	V closed	V open	
353	340	86	117	
355	302	76.1	108	
4—	190	48.3	106	
405	170	44	106	
410	145	37	103	
420	120	32	100	~~off~~ Peak Fa
420	130	33		off —

98 — Fe + 2 ni —

1252	317	82	112	
105	268	70	102	
110	262	68.5	102	
120	253	66.4	100	
130	246	64.3	98.5	169
145	122	32	60	215
150	110	29	60	
205	74	19	40	~~660~~ 247

2nd Run

850	332	83	114	
900	294	74	104	
925	263	66.2	99	168
953	204	52	86	276
1007	105	26		312
1007	170	42	80	new Fe
1015	132	34	70	332
1020	120	30	60 @ 5	342
1035	74	19		366 — off

98 Wt grid 4.4
filled 11.2

Dried Ni Hydrate air dried.
then moistened, thoroughly out 7 pts
Graphite thro 12 on 16 mesh 3 pts
only mixed just ground
packed wet + tamped

6.8 of mixture in grid
4.76 Hydrate wet
2.23 metallic Ni

99 Fahrenheit 260 mash

1 min closed before reading

1045	277	72	106	
1052	250	65	102	
11—	234	61	99	No 43 Had 500 mash when taken off
1105	227	59.7	98	
1110	223	58	97	
1115	217	57	96	
1125	207	54.3	94	154
1140	147	35.3	82	198
1155	80	21	50	226
1155	122	32	63	New Iron No 42

forgot to record

2nd Run

1037	337	83	114	
1137	242	63	84	289
1152	194	48	82	343
12—	172	43	74	367
1220	75	18	40 @ ?	407
1220	185	47	90	New Iron Iron
1225	172	43	84	
1230	157	39	80 ?	432
1235	130	33	80 ?	442
1240	77	19		off

99 grid empty 4 filled 18.

Dried Mn Hydroxide air dried then moistened & weighed out 7 pts
Graphite through 16 low 20 mesh 13 pts
pks wet & hard

Reading taken after 1 minute

9 am.	374	95	130	
905	328	84	118	4th peg
910	290	76.2	108	
915	274	71	103	
920	269	69.5	102	
925	267	69	102	
930	263	68	102	135
957	130	32	64	
1010	109	28	50@60	249 off

put on the reducing —

Second Run after reducing the ox

1005	335	84	112	
1010	312	77.5	106	
1010	Put in a ferric hydrate grid been reducing for hour			
1002	250	59		
1003	230	56		4th peg
1004	150	37		
1005	107	27		put back other Fe
1005	322	80	109	
1010	308	76	104	122
1030	297	73.5	102	172
1040	289	72	100	220
1045	280	70	97	243
1055	267	66.3	94	288
1100	258	64.2	93	310
1110	230	56	80	351
1120	120	30	50	380 chipped Fe over

100 grid Empty 4.6
full 12

Air dried Nickel hydrate after washing, moistened, weighed out 7 pts graphite through 120 on 30 mesh 3 pts peted with a hand.

of the 3 98 99 & 100 100 gave the least when 1st put on 150 ma-

Remark 26% of Nickel hydrate was water, hence in No 100 Leaves 3.84 grammes Dry Hydrate leaving finally 2.43 gram metallic nickel or the most of any grid yet, Dry Hydr has 63.4%

1125	157	39	80	393
1130	147	36	70	405
1135	138	34	64	417
1140	123	30.5	60	428
1150	83	21		446 off

Iron 98+99 - oxidized + the disconnected for 8 hours then put on ct again Oxdz - required 50 Mil amp hours to bring them back to gassing on Ox showing that loss, both gained the same amount - to about 10% reversion -

100 is probably the best of the 3 - 98 99+100

But the difference is so small that probably all if exactly ptd under same conditions would act same

100 has 7.4 grms of mix of Hydrate + Pb 90
99 " 6 "
98 " 6.4 " taking this in consideration there is no difference in the age of the graphite flakes of mix -

76 –

1.78 grms Nitr 5th Run – Beam Reduced 4 ox twice – Then on all night 60 m.a. 4 all day 100 m.a –

427	347	87.5	115	
455	267	68	96	143
505	257	66	92	186
515	247	62.5	86	228
530	222	56.3	82	287
540	204	52.3	75	327
550	190	48	74	355
6 –	93	23	45	
601	197	49.6	86	New grm in 1 to 43
610	157	39.3	70	408
620	139	37.3	64	432
630	139	36.2	64 ?	455 — 100 ma on 3rd day
640	133	33	63	477
650	105	26.5	52 @ 60	497
700	10	3		500 max –

This is better or as good as 87 as it has not got as much Ni in it,

101 grid Empty 4.3
full 10.4

Nd Uranium pp bag Potash, Yellow
Compound, Dried but still not
perfectly dry –
graphite on 30 % pb
3 pb.
pb.d. only –
Redeg at first.

Dont seem to work well as neg Element
Salts go right down – perhaps
must be oxidized charged

102 grid Empty 3.1
full 9.1
Molybdic acid 7 pts
Graphite 3 pts
20 m 30 -
Pkd dry

Pentacem work well as a neg Elect

103 — grid Sample 6.1
filled 12.5
Tungstic acid 7 pts
Graphite 20 m 30 3 pts
pkd obv =

Dont work very well as Neg Elem
but better than Ur or Md,
yet all 3 work well in Carbon
plates, Especially Ur

104 grid Empty 3.7
full 8

Dried ord temp Ferric Hydrate
7 pts
flaked Graphite 30 or 30
3 pts
pkd dry —
a little comes out at grains
some on 150 on surface

Dont reduce with a cont
gased from the atmosphere

after reducing for 5 hours
it only showed a slight reduction
running down in 5 minutes
showing that only ferrous
Oxide reduces to metal &
that ferric oxide are practically
irreducible to metal in
alkaline electrolyte

3.5 g Indigo — does not reduce but apparently absorbs oxygen — in grid

Grid Empty | 2.9
filled | 5.57

3.5 Indigo
1.5 Graphite —
placed Dry

106 Bi nitro Benzol (Nitro) Crystals,

grid Empty	3	
full	6.9	
Bismuth-benzol	3.4	
Graphite 20 on 30	1.5	

It acts as an oxy giving element

.8 Volts with Zinc -

S S S

Evidently this opens a vast field in the organic line for oxy atoms & Telepolarizers

Hoop-La!

F_2 element

1st peg	.36 V	for 20 minutes	20 ma -
"	.32	at .625	½ hour -
"	.30	650	
	27.5	750	-

S S

It was oxidized about 15 Hours
to one of graphite gave approximately 60 grams and
left impurities weighing 1.03 to 1.40 —

76 — after changing has been
Charged + standing 5 hours

750	295	75	110	
800	250	64	97	
815	213	54.3	84	
830	189	48	76	
830	210	79	112	changed Fe —
842	280	61.3	104	
900	264	66.5	102	284
908	150	38	70	311
915	off	from 908 to 915 — on 915 —		
920	120	32	70	321
925	120	31	65	331
930	120	30	65 est	341
935	120	30	—	351
940	143	36	65	362
953	130	33	62	391
1000	106	26	—	404
				off

This shows some loss,
The volts are not so good
+ there is apparently 20% loss of amp —

107 - ~~[illegible]~~ Aurelius Chrysostomus

108 Andrew Roth

109 – 3rd Run

930	390	94	136	
935	212	54	117	put on 2nd pag
936	100	87	120	
937	56	102	121	1st pag
947	53	95	114	"
10	40	66	86	" 46 matt

3rd Run 109 – 1st pag

908	68	112	130	
915	60	106.5	114	7.4
922	59	102	112	14.4
930	57	100	111	22
935	56	100	110	26.4
940	54	97	109	30.5
947	52	94	106	37
955	49	86.5	108	
10	44	77	104	47
1008	34	60	84	52
1010	30	49	64	53 matt

4th Run 1st pag

3	70	127	131	
308	63	114		
817	61	107	114	
325	58	104	110	26
343	22	40		36
420	[illegible]	12		47

109 – The old blue pp made by amilin oil w/ Hot Water & Chlorate Potash – Absorbs O good & gives with Fe – 90 Volt steady –

Grid Empty 3.8
full 7.2

Packed wet

Porcup 3.5 pts
Graphite 20 on 30, 1.5 pts.
Left all night OK Low amps

818	303	76	112	
820	234	58	106	
825	142	36	85	
830	55	15	40	
	2nd	t		
C				
140	290	64	112	
145	180	47	104	
150	162	40	102	34
155	132	24	102	* put on 1st pag
* 155	40	82	104	
235	25.5	22.5	40	

109 18 pog

808	68	112	130

110 is Aniline Yellow (Violet

111 is Aniline Yellow —

112 is Nitrophenol

No 111 aniline Yello — blue at off a quantity out like 112 Nitrophenol

833	230	57	108
835	135	34	100
840	50	13	40

No 110

842	255	62	110
845	50	11	

111 2nd Chan 18 pog

1010	64	117	130
1015	58	104	114
1025	54	97	111
1033	47	84	106
1050	22	46	66

20 minutes

off

113 grad Empty 3
filled 7.6

7.3 ~~[illegible]~~ pts Fence ~~[illegible]~~ Ch ~~[illegible]~~
~~[illegible]~~ pbgo —
very little squint + Chat grounds
Dohite — 5
If feg right 1.44 grms Meat from
after ½ hour
No gas + scarcely any legs
~~[illegible]~~ out
with 94 ni

550	240	58	86	
5555	90	23	36	off

now ex till I gets
Supper

7.6
3/4.6
7.2
3.4.5
1.6
1.6.8
1.2
1.4.4

7.15
3.16
9
3.16
2.30 K
2.30
7.15
1.30
1.19

114 -- grid Empty 3.16
full 7.15

Ferrochl only ~~6~~
pbqo ~~47~~

OK .82 gram Met Iron

Considerable gas after 1½ hour a large quantity less — gas may be due to 1/ Lack of Iron

76 Mi

6 —	320	78	110	
607	200	50	66.	
616	175	46		took off —

Now Op 600 ma till I go to Dapper

Remarks — of the 4 grids 13 14 15 + 16 14 is the only one that has any Capacity — too this is just like 16 there must be something in packing 16 is not forth no good — 13 + 15 seem to have no capacity at all which may be due to wrong packing as 14 & 16 have most capacity — must check off + 13 + 15 but problem 16 —

7.3
2.6
4.7 not potent
3.2 9 grms Fe2
1.45
1.65
1.16
1.3 6 5
1.4 8 0 5

115 grs Empty 2.6
filled 7.3

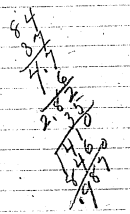
Ferrous Chl ~~[illegible]~~ 7
pbgo ~~[illegible]~~ 3

~~2.10 Met~~ 1m

1.46 Met 2m

No gas after 1/2 hour but
Carbon & Chl legs large
Bizz —
not oxdzd

1137	258	65



116 — grad Empty 3.7
filled by 8.4

Fm KCl Chloride (Ethyl) pb 6
pb 90 pb 4

gases ut end ½ hour —
Lots from leg — Solution
Little Colorless

.98 grms Met Iron
not oxdy

No. 39 is good for about 5 @ 600 watt — or more. Run it [illegible] at 620 ma for over hour before gassing —

No 42 is nearly as good — want 1 hour seasoning at 620. before gassing —

43 gave 850 watts on seasoning by 110 V net CA —

117 Naphthylamine —
Empty 5.9
full 8.6
3.5 nap
1.5 graphite —

118 Naphthalene —
Empty 4.3
full 7.3
3½ Naphthalene
1.5 graphite.

119 — Naphthalene treated dil
Nit. acid.

No 43 Fe 98 Ni — 4th peg —

1033	340	96.2	126	
1050	347	85.5	124	
11—	303	80	112	
1113	273	72	103	
on 1.31	305	80	112	
216	250	66	102	
230	232	62	97	
248	128	33	70.	
248	180	48	106	changed Ni
300	180	47.5	103	
310	180	47	103	602
325	178	47	101	
335	178	46.3	100	676
345	176	46	98	
355	174	45.5	97	736
405	173	45	96	764
427	168	44.3	94	836
435	163	43	91	848
452	157	42.5	88	910
5—	150	40	86	930
515	139	37	82	966
545	78	20	50	
545	222	60	94	new Ni — 1020
555	180	46.5	75	1053
610	132	35	66	1092
632	87	24	50	1182 off —

Left bath in all night on Valtrue'
This morning it starts at following which is surprising

745	175	46.2	75	
752	170	45.3	72	This is a phenomenon
8—	172	46.2	74	
825	172	46	73	1246
840	164	42.5	70	
9—	123	32.5	66	1335
920	62	17	40	1365 off

On again

1030	100	26	60	
1045	60	16	40	~~off bath~~
1045	222	57.8	80	new Ni added
1050	202	53.7	76	
11—	175	46	72	1405
1120	128	34	62	1455
1135	87	24	50	1481
1208	51	14	40	1518

786

59
48
107) 5900 (55.1
5350
5350
1500

na SO4 S 32
16
48 na S

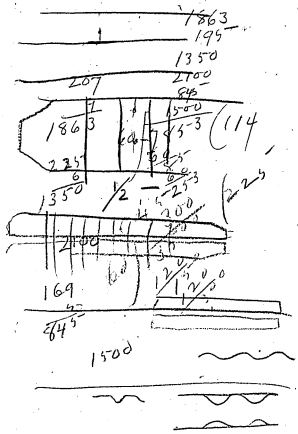
59
32
91) 6

67) 6

56 24
32 5
64 0

59
29
88) 560 (6.36
528
324

59
16
75) 5900 (786
5250
6500


1863
195
1350
2700
207
1863
114
1350
1/2
2700
169
1500

656
170
826

325
20
65-00
60) 6500 (108
60
5

1170
108
1278

1.5 amp

32 grams 1 amp

170
45

1450
118
320

60) 2400 (40
240
240

60) 1400 (
120
20

614
12
2

614

826
170
99

340
90
60) 3060 (510
300
60

510
146
65-6

826
170
60) 13 (72
91
1

60) 14400 (240
120
24

1170
1325

340 340

1665
48
13

350
25
175
700
875
60
27
240
55

45
320
90

135
147

146

826
170
99

43
320
86

129
137
120
17

1170
240
1410

60) 3300 (229
300
30

45 -
90 -

72
45
27

[ITEM FOUND IN BOOK]

No 7

Are all F & N.
Probably been NOH for 5 or 6 months.

Time	Amp.	Volts	Open	Watts
758	150	141	151	
809	"	130	136	
822	"	123	129	
833	"	117	123	
852	"	101	109	
912	"	96	102	
927	"	93	102	227
944	"	50		265
1005	"	30		325

May 23. 1901.

No 7

Notebook, N-00-12-20

117 Ferrous Hydroxide from
Ferrous Sulphate after
ppty added Hypochlorite of
Soda — It dries to a powder

Grd & Empty 3
full 9, 6.5 —
2.3 pts oxide,
1 pt Graphite —

150 ma gases bad in 5 minutes
+ light yellow powder comes out

118 Ammoniacal Solution of Sulph Copper · treated with Picric acid — seems to dissolve in Solution although pp formed was previously treated with KOH — It dont gas on reducing with 150 ma

grid Empty 2.7 / 6.4
full
precipitate 2.7 pb
graft 2.2 "

119 – Ferrous Oxide from precipt. Ferrous Sulphate by KOH + air oxidized to Ferric – look 30 to 45 minutes on 150 ma before grazing –

grid Empty 3
filled 7.6
Ferrous Ox 7 pts
graft 3 pts.

56
48
104 | 560
320
400 | 54

7/22 O3

68
3.6 | 3.3
5.1
3.7
3.4
148.4
18.5
20.03

120 Oxide produced by
Electrolytic alk. Oxidizing
poured plates of | FeS
dried + packed

Grid Empty 3.6
full | 8.9

2 grams scant
Not Fe

Oxide 7.0 | 5.
Graft 3 | "

gases after 15 minutes 150 Ma
Oxidy —

now Reverse Reducing

121 FeS plate oxidized by
Current | oxide dropped
down on other pole &
reduced - some FeS still
in it it was black wet
after drying it was reddish
Sulphide comes out in Solution
dont gas oxidizing

	Grid	Empty	S. G.
		full	10.7
Oxide	7	pts	
Graphite	3	"	

122 Black Magnetic Iron.
Hydrate - Dried + powdered
air dried -
Empty 3.1
full 7.5

7 pts Black Hydrate
3 " grafite -

---

gas [illegible] ox - put it on
Red [illegible]

123. Melted stick KOH
poured in saturated soln of
acetic acid from to get an
anhydrous oxide — it dries
powdery & is undoubtedly
anhydrous like that from
electrolytic oxidn of FeS.

Empty 3
full 6.5 —

7 pts oxide
31 " prop — } VA

New full size grids weigh
180 grammes per pair - P+Neg -

175 pairs weigh with rods etc. 66 lbs

Each pair grids will probably have
1 lb of material - making
175 lbs
Total of 241 lbs

Should get 760 mah on little grid this gives
about 25 Volt amp hours per pair -
or 4375 VAH, nearly 6 Hp hours

Solution can probably be got to 60 lbs
Cells to 40 "
Wood etc 75
Asphalt + Gum medium 20
195
241
436

124 aluminum Chl T_2
thrown in molten KOH,
Ox is whitish -

Empty 3
full 6

Ox 2.12 pts
Graphite 800 milligrams Dry pack

go in Bag right off -

175 HCl Solution Magnetite
~~to~~ Molten KOH poured into it
[Washed + dried — Dried powder
but was dark red, not black.]

Grid 2.7
full 6.4

Ox 7 pts Graphite 3 pts
pkd dry.

NG

43 – which engine was in the ni 5 7/8 mah –
at 126 – which has been on all night –
only –

807	340	92	124	
825	257	69.2	100	
835	241	66	97	114
915	102	26.3	60	327

50

500 / 34 / 95

500 / 558 / 63

42 / 64 / 50

356 / 35 / 50

50 / 16 / 1

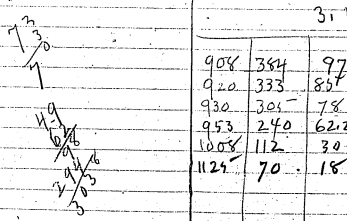
126 Molten KOH poured into Conc
Solution Nickel Nitrate,
This is 1st Batch —

Empty Grid 3
full 8
3.5 pts Ni ox
1.5 pts grafite —

3.5 oz 2.2 Mol Ni ply 2 –
abt 900 mah Theoretical –

43 grid gone 905 mah — 43 wrist 1165 Quality Rechgd —
& 127 new Ni Gone as well mah

917	300	80.	110	
940	230	61.8	91	101
957	200	53	84	162
1007	185	49	77	194
1033	73	20	50	260
1035	160	44	90	New Fe
1054	121	33	80	305
1103	100	27	78	321
1115	67	18	60	334 Off



127 grid Empty 3 full 7.7

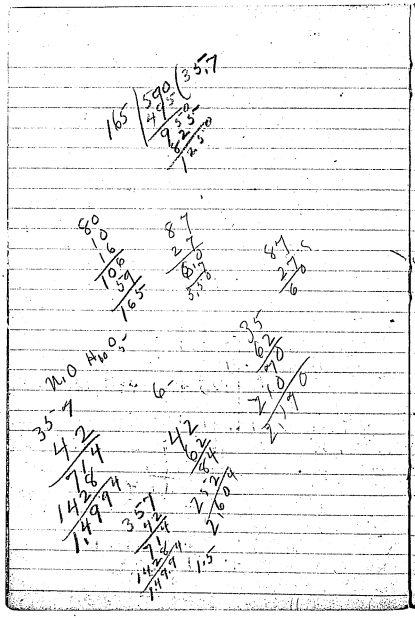
Pouring Molten KOH into
Concd Sulphuric Medium

No Ox 3.5 pts
Graphite 1.5 pts —
Pld Moist KOH

3 wet Ni

908	384	97.	138	
920	333	85	123	
930	305	78	110	
953	240	62.2	103	
1008	112	30	70	273
1124	70	18	60	386

Off



128 Molten KOH poured into
Conc Sol Nitrate Nickel

Empty 2.7
full 8.4

Of 3.5 pts
Graphite 1.5
pkd mount.

4.2 ~~2.8~~ NiOx
If Hydroxide about 2.8 met Ni
Books says has $5H_2O$ to 4 NiO,
~~then of Ni 35.7 [illegible]~~ mak
a little more H_2O than Hydroxide.
~~[illegible]~~

1117	315	84.2	138	now Fe 1.0121
1125	263	71	114	gone 78 much now
1140	226	62	106	100
1155	207	56	104	154
1219	90	24	60	203
1225	82	2.3	60.3	
1235	127	35	84	now Fe
1252	103	28.2	80	253
110	83	22.2	70	280
				0.66

129 not fully charged Fe gone so much –

127	390	103	136	
152	90			

~~no ox~~

no ox enough
100 mph –

6 –	360	93	122	
6.10	310	80	110	
6.15	275	72	106 –	
6.20	264	68	104	
6.30	250	66.2	102	

put it back

so can run Curve in morning

915	330	84	116	
1014	220	56	94	275
1635	200	51	87	348
1115	170	44	76	468
1125	154	41	75	495
1135	127	34	74	518
1135	177	47	114	New Fe
1140	110	30	75	541 chrgd Fe
1145	140	37	93	551

129 – new (our pounding) grid

7.4
2.8
10

Empty 2.8
full 7.4

Matter ROH pounded into ~~[illegible]~~
Conc acetach 1 hi

3.5 pts ox
1.5 " Graphite –

3.22 Hg rest
about 2 water hi

Don't seem to go enough graphite because probably hi this fine powder should be lump (15) 20% much –
not fair –

goes very little 1st 20 minutes
on 150 mph.
after 2 hours very little gas –

1150	130	34	86	562
12	117	31	84	882
12.10	93	25	80	600
1220	62	27	60@80	610 off

This is best yet I think

Zinc bat.

at 6 35 pm put it on

95 Mil amp to run over Sunday

Volts are 86 closed 88 open

640 – 80 ma 71 V

720 65 Volt closed 72 mil amp –

945	300	77	85

grid Emp 2.8

full 13.1

7 pts Black Ox Copp

3 graphite –

Poked most

4th pag

2	210	57.5	80	Dont Recover pencil
205	213	58.3	82	in 6 seconds
220	213	59.7	60	in 5 sec to 80 along –
233	217	60 –	72	
240	216	60	76	in 5 sec – 80 in 15 sec
245	216	60		off –
432			93	no ct –
433	~~285~~	80	86	
445	222	61	70	6th pag
445	420	56	70	
450	510	54.5	60	right off 78 in 6 sec
5 –	470	54.7	70	To 80 in 15 sec
512	470	55	70	78 – 15 sec
533	490	55 –	70	" " "
6 –	495	53	66	" 25 " 588 Mah
				" 30 – off –

See to left pag 8

131 Tungsten Sulphide 6 of OX + S process Heat

Empty 2.8 new grid
filled 11.8

7 WoS_2 + 3 graphite - OX

This dont go at 350 ma Even after
1 Hour

122	310	80	110	as OX doble Elec
123	170	46	76	with Ni
125	169	44	70	
137	125	34		

off to OX the Wo —

Not good as appears promising as Exydable
metal but it may be due
to grain — work it up

43 Fe + 87 Ni – now put together
1/8 part –

4th peg –

247	271	101	126		dif –
255	330	90	112		22
3	320	87	111	74	24
305	315	86	110	100	24
310	310	86	110	126	24.5
315	303	85.3	109	166	
315	320	88.4	112	Put in 40% Sol Koll.	
318	332	91	113		22
320	333	91	113		22
327	325	88	110.5	231	22.5
332	314	86	108		22
342	301	82	103	308	21
350	281	78.3	98	348	19.7
355	270	74	96	371	22
402	250	68.4	92	401	23.6
415	200	53	82	450	27.
420	150	41	72	464	29

Took it off to recharge –

43+87 again bench 48 blows
138 V offset
4th pay

440	370	110	125	
447	362	107.5	125	
455	345	105.2	126	
500	332	103	125	
505	326	102	123	
510	315	101	122	
515	317	98	119	
520	306	94.5	114	
525	277	90.6	108	
530	278	86	104	
535	272	83.1	101	
540	250	82.3	100	
548	242	81	99.3	
555	240	80.3	98	371
6—	237	80	98	
605	235	78.5	97	410
610	231	76.8	96	
615	224	76	95	448
620	210	72.3	94	
625	197	56	90	483
off 5 minutes				
630	225	56	90	
635	175	44	75	494
640	168	42.4	72	512
645	163	41.5	68	
650	154	40	66	539

~~Had to open 5 minutes~~ – next
~~Second~~

655	148	37.7	67	off to Reading

Ox & S fusion process

132 Molybdic Sulphide

Empty 3 —
fuel 7.9
Graphite 3
MoS 7 pkd moist ~~[illegible]~~ old grid

~~4th pass — grain right off~~ burn in 24 hrs

1018	82	22	50	
1020	57	15 —	—	off —

Mo — as oxdzbl. metal

135	270	70	98
140	120	32	55 —

off to Oxdzd

Dont work well
goes running down to .4 Volt
as Displzr

old grid

133 Chromium Sulfide by fusion Cx + S

Empty 2.7
filled 8.6

7 pts Cr S 3 pts graphite - pkd moist

gases right off - No S Comes out - Chromate K (seems to form)

goes into Solution

MJ Koff

fusion ox + S

134 Uranous Sulfide (new prep)

Empty 2.8
full 11.1

7 Nr 6 3 graf - (moist pkd)

gases right away
Not good

455	54	15	80@90	406

Don't think this is good it varies very much but Red Cap is replaceable the

135 Ni. Hydrate ground hard in mortar ~~too~~ so as to only show graphite sheen – used 50% Sol. KOH.

Empty 218
fuel 7
7 pts MnO2 3 graphite, new grid

Takes 350 ma without going down for 20 minutes already –

6	410	105	138	Fe No 120 – 4th pcg
608	343	87	130	
617	282	72	120	
627	197	51	102	136

	2nd trial			Fe 120 – 4th pcg
145	360	96	137	
157	203	53	124	
236	130	34	100	
245	122	33	98	
315	115	30	98	
335	110	29	96	275
340	110	29	96	
341	160	42	130	new Fe –
352	140	36	120	
4	122	32	112	
437	62	16	90	

9.1
2.8
6.3
7
4.1
6.3
1.3.3
2.6.4.6
2.7.8.3
2.7.7
Fe_2O_3 H_2O
56
56
112
66
1.8 (1120 / 1068 / 52 / 52.4)

136 Ferric hydroxide boiled 8 hours + dried —

grid 2.8
full 9.1

7 pts. ox 3 graphite, moistened 52% Sat KOH
wet grid

Gases replit off on reducing

2.77 · mst F_2 if no acet KOH,

1030	298	84	130	
1040	260	77	121	
1047	230	64.5	106	
11—	204	61.5	98	
1125	192	53	94	204
1145	160	43	84	264
1150	150	42	83	277
12—	140	38	80	278
1215	110	30	72	327
1230	90	25	60	352
1245	74	21	60 @ 65	372

0.584

136 2nd Run - with 94% Ni old

1130	380	102	130	
1150	260	70	98	
1207	80	22	40	
1208	290	75	107	put new Ni in
1225	150	41	68	
1253	90	24	60	277
105	90	24	60	
105	150	39	75	new Ni
115	84	23	90 m	5500
105	365	94	130	
115	272	72	102	
120	257	66.5	100	
225	60	15		

~~Precipitation Change~~

9 9/10

453	390	100	134	
505	344	88	124	73
515	300	78	108	176
525	265	70	100	173
530	240	63	94	194
535	150	40	70	210
545	100	27		
			60 @ T	231

45% Ni

137 Sulphide NiS_2 made by Chem'l up stairs

Empty 2.9
full 9.15

7 pts. NiS_2 3 pts. graphite pkd wet with 50% KOH

4 Hr reg weighed wet,

1010	272	78	106	old Fe worked

Kept going right down
Always old Fe made no diff.

138 Grid Empty 1.8
full 6.2

Manganous Sulphide Di

pbgo 3 MnS_2 7 —

pl(c) wt KOH
wt wt 1315 —

It does something
shows it can be
worked up as a
depolarizer —

139. Empty 1.6
full 8.7
Mercuric Disulfide 7 pts
graphite 3 pts
Moist KOH wt 11.1

808	353	89	120	
810	305	77		
817	137			off ng

140 - Empty 1.8
full 7.4 wt.

Ferric Hydrate Boiled by Chaney
up this 8 hours

OX 7 pts

1/6 was added by Roff

Graphite 3 -
pts wet 50% Roff —

about 3.22 Ferric Hydroxide

10 — 105	340	83	118	
1257	355	92	122	

grows down to 100 in 8 minutes

The Hydrate boiled by Ruffa works good yet this dont, both are new punches grids -

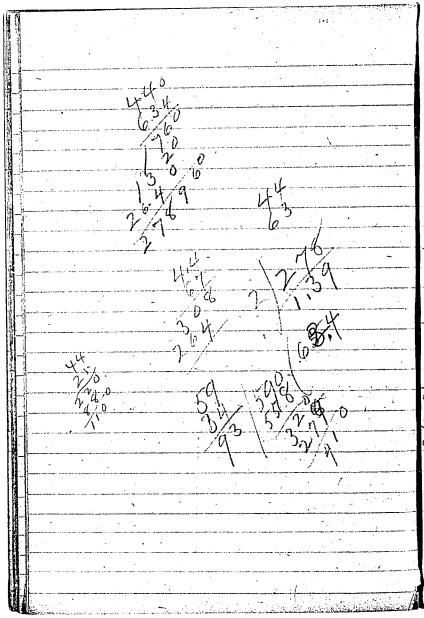
7.4
1.8
5.6
39 x. 4 6/7
3.2

141. Empty 1.8
filled 7.6

F.S. fused with Carb Nat + Nat K.
+ dissolved by water-bath

Graphite 1.5
OK 3.5
Weight out 5.8.

923 957	385 90	97 2/2	129	off-clay



142 Empty 1.8
full 6.2

Ni Hydrate 4.4 grms

No graphite —

Wet it with alcohol

on for ½ hour 140 mv no go
swells grid

If no pos pure + hydrogen —
then 2.78 met Ni.

should give 1.39 amp H.

835	400	102	134	Ni 121 Fe
845				
900	380	94	124	
905	90			

Evidently got out Fe and
Buzzed off and got & found 1/32 all
black insoluble unattacked —
Must have 1/16 grid + some graphite of
Equivalent for contact + porosity

143 grid Empty 1.8
full 9.4

Sulphide Fe (FeS) (thru 30 on 50) screened so that the
wool not go thru the 15/1000 hole
of screen — No grit the — 1/8 Inch
spud — Red mult 52% KOH,
417 grams Metallic Iron

94
6
1.3
6
1.6
1.6
4.7
4.7

56
3.1
6

168
57
3
63

144 grid Empty 517
full 8.3

8 pts Mr Hydrate, 100 on 200 —
2 pts — graphite

1/16" thick grid cold holes
used alcohol to moisten

1.38 wet lb of no cf —

~~255~~	~~312~~	~~74~~	~~122~~	
525	~~285~~	80	110	

3rd) 4th pay -

110	300	94	112	
115	233	60	96	
120	204	52	84	
121	235	60	112	new ni
130	130	34	70	66

(cobalts get into it)

4th time -

155	378	94.5	106	
1	293	74		x 51
105	262	67		71
110	235	66		104
120	162	40		10
				75

145. Emergency grid 5.8
field 9.14

Sulfur from 30 on 50, 8 pts
graphite -2 pts

Monostrand with 50% RO
Thin grid 1/16 + 1/8 atyle / 6 up perf -

335	325	85	122	
340	262	69	104	
350	210	55	90	
355	172	46	80	
410	120	32	60	
				off -

547	337	88	130	
555	264	70	106	40
6	249	67	103	61
605	237	64	100	81
610	225	62	98	101
615	210	57	84	119
625	163	45	78	150
630	150	41	72	163
635	135	36.5	66	174
640	120	33	60	185
645	114	30	58	195

146 Empty 5.6
full 8.3
Nitrogl 100 on 200
4 pts
graphite 1 part - 1/16 grid new -
moistened water and

533	325	82.3	110	
	goes	down	quick	1 §

~~Bro~~ after being on all night - 0 of it wouldn't give anything stuff out Contact - I can Redey it -

1240	322	83	112	
1247	220	54		

When goes right down

147

~1225	355	92.5	130	
1240	100			mg

147 Crucible Empty 1.6
full 5.65

Ni black ox by igniting
Nitrate Ni very low
heat —

Don't go over but 50 deg
before pulling on Ct —

4 pts Ni_2O_3 —
1 pt graphite —
wet with water
after wet. 5.5

822	245	64	144.5	
825	236	60	134	
830	230	58.4	127	
835	start	to go down rapidly		

148 Empty 1.7

full 5.

16 grs. new

Hydrated Perox Ni by
Hypochlorite - 4 pts.
graphite 1 pt.

Moisture H_2O —

Wt after wet 5.7

842	340	87	126	
850	195	51	110	
855	120	32	100	48
9—	100	26	96	56
905	80	20	90	68

1/16 grid new pap
oxidized

149 grid Empl 1.7
full 5.3

Ni Hydrate from Sulphate
boiled several hours —
& filtered washed with boiling
water, air dried. It is not
glassy like Reg dried hard yet
somewhat friable, has lighter
Color —

NiO 3 pts.
Graphite 1 pt.
wt 5.8

Ok no to grid has worked 1½ to 2 pounds of bad NiO
before grid came

837	390	98	132	
840	310	78	123	
845	215	54	112	40
850	130	34	104	54
9—	93	25	90	72
910	80	22	80	86
919	42	18	100 in 10 sec	100
927	65	16.5		
935	60	16	115	

116

150 Empty 1.6
full 4.5

Same as 149

MnO 4
grey 1
wet 5.5

This grid plated inside

937	330	84	114		
955	92	24	86	56	
1002	80	21	100	in 6 sec	68
1010	71	18			78

3rd time 4th pag

805	340	91	120	
812	304	77	110	
825	275	70	106	100
829	250	64	104	117
831	225	57	104	125
833	150	38	90	131
835	128	33		135
845	113	29	80	m.c.s.o 155

4th time 4th

340	383	97	126	
345	315	81	110	29
355	280	72	105	78
4	272	70	104	101
405	262	67.5	103	123
410	247	64	102	144
415	170	44	100	161
420	115	30	82	173 off

151 Empty 1.6

full 4.4

Mn O fm. Sulphate, boiled Decant
Nitrus

Graphite 1 3.5 pts
1.5 pts

Pkd dry

1130	440	113	150.5	4th pag
1131	278	120	142	3rd pag
1135	248	104	131	
1145	100	43	80	53

331	340	90	114	4th pag
335	313	81	109	
340	295	76	106	47
346	273	72	104	73
351	130	34	90	91
355	122	32	82	100
4	118	31.2	80	110
405	114	30	75	119
410	110	28	70	129

157 3rd Run on all Sunday night 4th peg

926	388	98	124	
930	333	85	111	This is [illegible]
935	310	79	107	50
940	293	76	104	75
945	284	74	102	99
950	270	70	100	122
955	262	68	96	144
1012	100	26		195
1014	190	38	108	200 new from
1020	130	34	80	216
1025	114	29		226
1030	104	27	65	235

4th time 4th peg

818	370	94	120	
820	352	89	116	
825	332	84.3	112	
830	314	80	110	67
836	302	76.5	107	98
840	297	75	106	118
845	283	72	104	142
850	270	68	103	165
855	250	64	102	186
900	140	35	85	202
905	112	28		
908	172	44	100	207 new fr
910	152	39	90	217

152 Grit Empty 1.8 filled 5 50 1.5 3

Same as 151 except pkd water more

H_2O_2 3.5
grit 1.5
wt 5.8

3rd peg

117	252	107	124	
127	217	83.3	112	40
140	85	38	70	72

off —

on all Saturday

4th peg.

245	347	92	117	
800	294	77.5	106	80
306	270	70	105	108
310	130	34	84	121
316	120	32	75	133
320	118	31		141
325	113	30	50	w 3 sec 151
330	110	28	50	4 sec 160

This is [illegible] Run

915	137	35	80	224
920	127	32	—	235
925	115	29	—	245
930	100	26	—	255

off —

930	360	91	120	
935	320	80	107	28
940	303	77	104	54
945	258	65	90	77
950	134	34		88

off

50
17/3
3.7
2.3 1

2.3
7
1.6
3.7
6.4.0

Empty tube 1.7 / 5

153 = Ni 3.5 moist
graphite 1.5

This is designated Zinc dust in warm Sulphate Nickel Nisulfate in excess after quiet. Excess poured off. then water washed. then treated very dilute H_2SO_4 - till it clotted then filtered, + dried by pressing with spatula on blotting paper

226	362	90	117	
235	190	46	60	41
240	67	18	26	52

formed Zn in oil pot. 2nd run 4.15

1032	357	92	116	
1035	332	85	110	
1040	314	80	106	44
1046	152	40	50	67
1050	100	25		75

Left pan

1135	115	29	78 1st		193
1140	110	28	68 2nd		202
1145	105	27			211 off
			3rd	Same	

458	370	94	122		
505	310	80	106		34
510	296	76.2	103		59
515	283	73	100		93
520	270	70	96		106
525	252	66	92		128
530	230	60	88		148
535	105	29	75		162
536	170	44	102	new Fe	
540	140	36	80		172
545	125	32.2	72		183
550	113	28			195
555	110	27.6	62		202
					off

seems no change

1000	350	88	116		
1005	312	80	106		46
1010	294	75	104		90
1020	285	72.5	101		180
1025	253	65	96		182
1030	260	36			197
1035	130	32	80		197
1036	175	43	100	new Fe	200
1040	155	38	83		211
	153	38	80		233

Changed Mn to better with long weak

243 max 115 — 28

154 Empty 1.7 full 4.8 about 1.3 metric

Boiled Ni Hydrate for Sulphate

3.15 pts Ni
1.15 graphite, dried dry

Mixed with some fine asbestos fibre — to give porosity & swell it,

411	330	86	110.		
415	302	78	104		21
422	110	30	70		45 new Iron
424	140	37	80		48
430	110	36	70		60
					2nd

1051	372	94	120		
1057	335	85	110		
11	329	83	107		62
1105	319	82	106		89
1110	311	78	104		113
1115	302	76	104		140
1122	140	36	90		166
1125	130	33	75		173
1130	126	32			165

48 / 1.7 / 2

See left hand

420	380	95	122	
426	320	80		35
432	300	75	103	66
440	135	35		100

no

32 / 6 / 145
6
10
2 4 10
16 7

155 Empty 115
full 412

Bottled Hydrate in 315
115
gray

pilot day Served

430	355	94	120	
438	300			43
440	135	36	73	53
445	125	33	70	64
450	115	30	55	74
455	106	28	—	83

2nd 4 tap

1145	370	93	117	
1150	320	82	105	
12	280	72	100	79
1206	130	43	80	99
1210	122	32		
1220	110	28		126
1227	100	26		138

156 Empty 1.75
full 5.20
plain Mi Hydrate (big cat) 3.5 pb
graft thro 50 on 60 1.5
fines
Moist with H_2O — 5.7

157 Empty 1.7
full 4.17

Big lot Mn Hydrate 3.5
graphite thro 30 on 50 — 1.5
Moist H_2O — 5.7

Put it in solution KOH at
boil in 5 minutes
Changed solution to
Hypochlorite Soda for Mellanoff

Cut gives up

2nd Run

4th Peg

802	430	107	134		
815	313	78		80	
835	303	74.3		181	
800	300	75.6		180	
805	299	74.1	102	181	
840	290	72		221	
845	283	70		245	
850	273	68		266	
855	270	68		290	
900	140			319	
910	132	33		333	
915	160	48		357	new Run
915	136	43		343	
920	130	32.3		355	
925	120	30		365	
930	105	26.5		374	coff

5th

1110	360	90	118		
1120	310	78	108	56	
1130	300	74		107	
1135	290	73	104	181	
1140	280	72		182	
1145	250	70	102	178	
1150	274	69		201	
1155	267	68		224	
12	257	65	99	246	
1205	240	60		267	
1210	202	51		273	
1211	222	56		286	new Fa
1213	170	43		288	
1220	140	35	70	300	
1231	70			336	
1235	132	34			new Run
1240	127	32		340	
1245	120	30		350	
1250	110	27		359	
1255	100	25		367	
101	400	100			
1	297	75		86	
1	297	75		236	
1205	278	70		251	
1206	278	70			
1210	237	59			
1213	158	39		276	
1	142	37			

158 Empty 1.8 4.8

full 4.18

Big batch NiO 3.15

graf 1.15

Pressed dry in plate + put in grid — 3/4 only full

2.10

2/1.25000

630 Mat

1st Run

4th Peg

1107	370	93			
1111	330	83			
1115	317	80		45	
1120	307	77		71	
1125	294	74.2		96	
1130	283	72		120	
1131	274	70		146	
1140	262	67		165	
1145	257	65		190	
1150	248	63.3	86	212	
1155	238	61.2		235	
12	230	59		251	
1205	220	55.4		270	
1210	209	53		285	
1213	250	63		288	new Run
1215	177	45			
1220	155	40		312	
1225	145	36.2		324	
1230	130	32.5		335	
1237	118	28		350	
1241	100	25		357	

as there was only 3/4 of grid used 350 is Equal To 466 Mat

158 Continued

203	350	95	122		
220	295	74	104	101	
230	283	71		149	
235	274	69.5		141	
240	267	65		174	
245	260	69		216	
250	255	69		237	
255	235	54.5		277	
305	190	43		294	
310	141	36	80	308	
315	120	31		319	
318	210	54			
320	180	46		333	
325	167	43	85	347	
330	155	40		360	
335	140	36		372	
340	117	30	80 Slow	382	
	70				
110	370	94			
120	284	78		56	
130	247	74		105	
135	240	72		123	
135	232	66		214	
2	225	63	98	239	
205	215	54	97	259	
210	183	46		276	
210	210	58		291	
215	157	40		314	
225	135	34		326	
230	127	32.5		336	
235	121	31		346	
240	115	29			
240	142	34		358	
245	127	32		368	
250	115	28			
817	345	87			
820	315	80			
825	290	75		40	
830	272	70		63	
835	254	65		95	
845	202	52		125	
852	160	40		146	

191/100
3/16

Collapse
Bright Yellow
Brown
Yellow
Pink

new Fe

off —

new Fe

new Fe

off

Taken out and reposited in another position than pressed in vide —

This has suddenly opened it —

159 = Empty 1.7

full 4.3

43
17
26

Bright NO 3.5
graf 30 on 50 1.5

1/16 9

Mixed with Asbestos —

1010	400	100		
1024	297	75	81	
1033	283	72	124	
1047	264	67	188	
12	183	46	236	
1205	120		261	
1206	148			new Fe
1210	137	34	271	
1213	138		276	
1	142			Left open from 1213 To 1
110	112		296	off —

160 Empty 1.8 45
filled 4.3 1.7
Nitrohydrate by batch 2.7
Asbestos .5
no graphite. 450 Mulgin

pkd dry —

1100	372	74	120		
1105	130				— ff —
			2nd		
103	430	105	140		
107	160	40			Ng

$$\frac{5.1}{1.6}$$
$$3.5$$

161 Empty 1.6
filled 5.1

Electrolytic Ox Fe from FeS — 3.5
no pbgo —
pressed hard ab photo —
grid about 3/4 full —

1007	350	80		
1008	100			

goes right down
Doubtfull guess
no Contact

162 Empty 1.5

full 5.7

Blacksmith Scale — 80 mesh
8 pts

graphite 2 pts on 30 50

125	357	90			
130	294			24	
135	230	58		49	
140	80			59	— 16 —

305	402	102			
313	370	94		51	
320	353	90	122	93	
325	322	85	118	124	
330	300	76	104	149	big gain
335	284	72		171	
340	267	68	98	194	
345	150	44		218	
352	112	28		229	off — 3rd

127	400	100			
130	377	94.2		19	
135	357	89.3		50	
140	310	77.5	104	77	Calipers 113/1000
145	300	75		102	
150	292	73		127	
155	283	72		157	
2	273	70		174	
205	263	65.3		196	
210	210	53		213	about same
213	120	30		228	

163 = Empty 1.75
full 4.8

Nitty bag batch 200 mesh + fines 5
Cornell coke (as ph) fine - 1/2 gram -.
Mes water) 1st bat + then added some dry
pressed to a plate in bag o crow press
4/5 full

164 Been Reducing
3 days. Cut on test
Showed that Ni Hydroxide
does not reduce to
Metal.

164 Empty 1.7 48 17 31
filled 4.8

Ni Hydroxide (Big batch) Hero 200 mesh .8
Graphite 30 on 50 — moist KOH — 2
plate pressed in screw press
Extra pieces from side put in top
as grid is full —

110	200	50			end Contact —
115	285				"
115	350				
120	334	88		50	
126	302	76		83	
132	274	69		126	
140	267	69		148	
145	237	59		168	
150	204	52		186	
155	182	46.2		207	
2	148	38		216	
212	110	27		241	off — 2nd
1007	450	112	138		
1010	420	105	134	22	
1015	375	94	138	55	
1020	350	88		80	
1025	307	76.2		112	
1032	270	68	108	136	
1035	240	61	107	157	
1040	200	50	107	184	
1050	170	43		209	
1055	150	38		232	
1102	130	33		238	
1105	120	30	100	244	off

6^{2}

32

1

6^{2}

3^{2}

165 = Empty 1.7 $\frac{56}{17}$ $\frac{39}{}$

full 5.16

Millbrook (Bigbend) thru 200 mesh

3.19 net no graf

Dwells grid bed — 13/64 aft 24 hours

$3\frac{1}{4}$ 16^{h}

pressed in plate, by screw press

Dry

Xtra pieces from sides put on top

so grids full —

505	400	99	138		
525	290	72½	104		113
535	270	65			161
540	260	63.5			183
545	250	63.5	94		204
550	240	60.5	86		224
555	230	58	88		244
600	217	54.5	84		263
605	202	54	84		290
610	191	48			297
615	177	44.5			312
620	163	42			326
625	149	38	65		339
627	180	46			344
630	139				355
640	118	30			375

X

new ni

off — 4 ft

1213	382	96			
1220	350	88			42
1223	322	82			50
1223	405	101			
1235	320	80			128
1245	297	74½			179
1255	274	69			226
1 —	257	65			248
110	210	53			306
120	182	48			322
125	173	44	72		337
135	145	36.5			364
140	132	34			376
145	150	38			340
145	127	32			390
150	117	30			400
>					

new nickel

115 100

X

new ni

off —

427	370	92			
430	350	88			18
440	330	82	120		72
450	284	72	106		126
455	270	69	102		138
457	340	84	110		148
500	316	80			175
505	310	78	102		185
510	302	75			220
515	287	72.5	98		235
520	275	70			259
525	260	66	90		281
530	246	62			302
535	235	58			323
540	190	50			358
555	167	43			379
555	147	37.5			400

new ni

447	127	
430	130	
495	120	
500	120	
510	120	

Hole Empty 1.6 64 16 40

full - 6.4

Blackmith Scale zero mark 8

graphite 30 on 50 2

moist with Rotb.

Hole pressed was new press
X two pieces from ends put on
top - grid is full.

1009	373	93			
1010	355	90		6	
1015	330	82		34	
1020	295	72		60	
1025	270	65		83	
1030	253	61		105	
1035	230	57½		125	
1040	194	48		142	X
1045	145	37		156	
1050	112	28		167	

off — 2 in

325	335	89			
325	328	87		28	
330	297	79		53	
335	276	67½		76	
345	250	63.5		119	
350	240	60		134	
355	230	57		159	
1 —	212	54		177	X
317	120	30		224	
322	112	28		233	

off —

improved

167 Empty 1.6

full 4.1

Nickel Cyanide 3.5

graphite 1.5

enhoard with H_2O — 5.8

Pkd as powder —

.7 wet in place

938	372	93	116	
943	335	84		41
950	316	79		68
955	207	54		90
10	115	28		103

756	383	95		
804	304	76.2		
815	164			88
820	146	37		100
825	133	34		111
830	122	32		121

off —

168

145	133	34		412	
145	150	45		700	new ni
152	130	33		430	
155	112	24		440	off. 130/1000
158	413	104	124		
222	175			702	
226	365	92		135	new ni
230	327	82		158	
235	300	76	108	184	
243	292	68		274	
253	269	68	104		
303	250	63	96		
313	215	54		307	
321	140	35		342	
327	310	77			new ni
341	208	43		402	
351	170			433	
1	172	36	64	456	
40	120	32		472	
45	115	29		488	

166 Empty 1.65 — 625 165 400

full 6.125

Prim sulphide thro 200 mesh 8

Graphite 30 m 50 — 2

Moisture OH

3.689 gms 125

pressed in plate on bag & cross press

grind full pieces taken from side & placed on top

518	335	84	120		not fully charged
520	312	78			
525	290	73		88	
530	265	66.2		88	
535	220	55		78	
540	150	38		93	
541	170	43			new ni
545	120	30		103	76
1157	385	96			
1202	367	92		81	
1210	311	78		76	
1215	290	73		101	
1220	286	72		125	
1225	280	71		142	
1230	273	69		172	
1235	267	67		192	
1240	257	65	100	214	
1245	243	62		234	
1145/10					
1257	280	71			
1	243	59		248	
105	173	44			
105	332	80			new ni
110	302	75.3		292	
115	277	69		316	
120	252	64		338	
125	222	56		358	
130	187	47	84	322	
135	120	125		383	new ni
137	190	46			left
140	155	40		400	

3rd Time 169

7.59	440	110	150		
8	410	104	140		
805	373	94		40	
810	357	94	120	70	
815	298	75	110	98	
820	258	66	108	118	
825	237	61		139	
830	211	54.3		157	
835	182	46.5	104	174	*
840	150	38	107	188	
845	133	34	98	200	
850	121	31	90	210	
855	112	28		220	off

440	370	93	124		
405	358	72		87	
415	254	65	102	132	
425	220	56		172	
430	195	50	100	189	*
435	167	43		204	
440	141	36		217	
445	123	32		228	
450	111	28		235	
455	132	35		244	
500	120	31		246	
5	102	27		257	off

this run 1.40 / 1.000

858	440	108	142		
915	300	73	120	103	
920	200	52		167	
935	174	44		182	
940	152	39		196	
945	137	35		208	
950	124	32		219	
955	115	30		229	off

new Fe

153	400	100			
1	340	83			
215	252	64		74	
220	210	53		114	
230	180	48		138	
231	230	56			
240	150	39		160	off

new Fe

169 Empty 2.15 — 1.4 — 5.4 — 2.1 — 2.9

full 5.4

Mt Hydrate 7 3 Dry 1

30 m 5th graphite

powdered & pressed in plate

inserted in Rogers pricked grid by alcohol/bat & alcohol/steam purge

grid has only length of plate not full.

505	370	90			
510	290	73		27	
515	227	56		48	
520	120	30		62	off

1st

900	270	67			
910	232	58		41	
920	204	52		76	
930	180	45		108	
940	149	37		139	*
950	130	33		175	
1003	113	28		204	off

2nd

507	360	90			
510	323	81		7	
556	310			48	
6	300	75		64	
1003	282	72		92	
610	270	68		115	
615	250	64		136	
620	230	57.5	102	156	
625	195	50	100	173	*
630	150	36.7		187	
635	130	33		196	
635	150	45		222	
640	84	27	104	212	
645	121	31		223	off

3rd

new Fe

169

828	400	101	132	
840	265	70		67
845	230	158		88
850	203	52		106 *
852	190	48		122
9	170	44		137

This had a iodine

no improvement.

170 Empty 2.85

full 7

Ni Cy 7 pts
Graf 3 mso. 3 "

plate weighed 2.1 grams

pressed dry - Rogers grid

820	290	72			
830	245	62			
840	200	57			
852	130	33			

off

171 Energy 2.8

Anhydrous Ni Oxide 7 pts
Graf 30 m 50 3 pts

Moist alight KOH, Roger gel

Weight of pressed plate 3.85

guess weight away

Ng —

172 Empty 2.8

full 5.175

575
282
29

Roasting

Metallic Nickel powder from
Sulphate by Zinc dust precipitated
Test
plumbago 3.25

Presses dry in cloth by screw press
it would need dry when ready for
to Frashly

433	430	107	148.5		
1127	350	87	124	26	
434	274	68		21	
445	147	36	55	58	
446	109				88
1108	350	88			
1110	312	77			
1113	277	70		35	
1124	105	26		69	44

173 Empty 2.8 Regenerated

full 6.3

6.3
2.5
3.5

Magnetic 2.8 made worked
with magnet + worked
Ogden Co
graphite

8 pts.
2 "

plate pressed dry screw press — it
was not quite dry when gave it to Off

410	180	46			
425	110	30		40	new ni
426	250	70			off — 2 no
430	110	25		32	
1048	410	101			
1053	303	76		41	
11	242	60		63	
1105	52				

Ng

174 Empty 1.7
full 5.650

3.9 [illegible]
3.16 [illegible]

Blacksmith Scale 200 mesh 8
graphite 2
plate pressed w/screw press, forced in grid tight, it broke (10 broken)

448	360	90	128		
453	314	76.3	110	44	
5—	260	66.3		64	
503	223	57	84	84	*
410	173	43		100	
413	120	30		112	off —
					2m
1126	380	95	130		
1130	327	81		28	
1136	284	72.3		54	
1142	255	64.2			
1146	202	51		104	*
150	130	33		127	off —
503	410	101	124		
518	312	78	104	78	
525	296	74	100	113	
530	270	67	94	136	
540	233	58	150	176	
541	230	64	90	178	
553	190	34		217	
6—	112	28		231	off —

Not very good

5.650
1.70
3.9

175 Empty 1.16
full 5.115

5.16
1.16
3.43
2.48 1st part

Hot KOH into Sulphate Ni—
boiled then dried
dried stuff treated by poachy to go-de
boiling
profite 7.5
3.45

pressed with 3 cwt press dry
grid not full

852	370	92	118		
9	337	84	—	47	
905	322	81		74	
910	313	78	103	101	
915	305	76	102	127	
920	296	74	102	154	
925	273	68	100	176	
930	160	41		194	
935	142	36		206	
940	132	34		217	
945	122	31		227	
950	112	28		237	
956	366	92	118		
10	340	85		23	
1005	326	82		51	
1010	321	80		78	
1015	311	78	104	124	
1020	305	77		150	
1025	295	74		172	
1033	150	38		188	
1045	150	38		197	
1050	142	36		203	
1055	133	34		211	
1100	127	32		220	
1150	169	32		236	
1255	152	32			

2nd

140/1000

176 Exempts 116
filled 5:1

Blacksmith Scale thro 200 mesh 8 pts
Graphite 30 on 50 2 "

Red cardboard paper mount with koff
in between so it will swell & force
Scale against ni pocket both
sides —

Plate - pressed in big screw press

421	365	92			
123	350	87½	122	24	
435	290	73		77	
440	270	68		100	
444	257	64		122	
453	195	50		162	
453	240	60		176	new ni
502	100	26			

NG

1400 plates 10/1000 Thick 35 lbs Rubber

Remarks)
Corrugated rubber to go 6st plates 1/32
perforated $\frac{1}{16}$ holes 1/32 apart.
$1\frac{1}{2} \times 2\frac{7}{16}$ weight before punch 1 gram
after .650 — 14/1000 thick

177 Empty 1.55
full 5.150

Blackenwto scale with
Cardboard Center 1/16 bo. scale 8
bowlled —
Graphite 2

1051	430	108	138		
1103	357	88	118	91	
1113	302	76	100	146	
1120	267	67		170	
1125	208	49		198	
1140	52	14		219	

178 Empty 1.75

full 5.55

Known iron
transcale weighing just round 8
graphite 2

pressed in screw press to plate
w/ carbon

822	420	104	134		
830	810	77		46	
840	263	66		95	
850	142	836		129	
855	110	26		1401	

179 Empty 1.6
full 5.6

Mornings from scale at red heat 8
graphite 2

pressed dry in screw press
broke in pulling in 2° long

730	403	100	130		
740	330	83	110		
755	262	66	90	135	
806	153	38		174	
810	123	32		183	
912	150	40			new ni
915	115				off
	~~[illegible]~~				

953	390	100			
10—	362	92	128	44	
1005	342	88	126	74	
1015	313	79	116	124	
1020	287	72	106	153	
1025	262	67	100	170	
1032	235	60		202	
1037	140	36		220	
1047	293	73			new ni
1045	262	68	88	260	
1050	237	60	87	281	
1055	200	52		300	
11—	164	42	70	315	
1105	138	34		327	off

180

345	197	50			231	new Fe
346	216	52				
355	170	43			267	
1 —	137	40			276	
413	126	32			366	

180 Empty 1.65 — 450 165 285

full — 4.50

our new 1/16 pinched grid

Hot KOH projected into fine nickel crucible, then pp bodies filtered, dried & powdered rather fine — 7 pts

Graphite — pieces 2" x 1/2 — 3 pts.

Pressed in a plate by screw press

9 —	370	92	120		56	
910	313	79				
920	293	74	103		106	
925	242	72			130	
930	264	70			153	×
935	134				162	
936	132	39			180	new Fe
940	130	34			181	
945	124	32			201	
950	120	31				off

153

put it on Cement reducing for a while —

2nd

9 —	366	92			30	
905	320	81	104		81	
915	296	74			105	
920	286	72			125	
925	278	70			173	
932	260	66	98		194	
940	237	60				
943	200					
943	202	52			211	3rd
945	192	50				

211

253	370	92				
3 —	330	82			30	
310	292	74			82	
325	260	66.5			132	
332 —	237	60			194	

next p 98

181 Empty 1.65
full 5.8

blacksmith's coal
wrapped with steel wool 8
steel wool .450

graphite 2

pressed in plate

1037	193	49			251
1040	170	43			260
1045	137	34			273

162 Empty 2.175

full 5.1450

Hot Kott projectile with Cone molded Acetaly pp bonded, filled 37 lead + powdered graphite swell wt 7 pts 3 pts

pressed in plate, Rogers grind —

805	430	108	138		93	
820	314	80	106		184	164
835	280	62	103		173	
845	150	38			173	
842	140	36			167	
850	133	34			167	off —
909	112	29			217	
312	360	90				
316	318	80			22	
335	273	69			113	
342	257	65			137	179
350	242	61			179	
400	100	25			224	
408	190	35			233	new Fe
416	180	35			246	
421	112	28			258	off —
950	437	110	139			
955	403	101	130		35	
1010	380	96	124		88	241
1016	327	82	107		128	
1013	313	79	106		154	
1020	304	77	105		1801	
1023	293	74	104		205	left/pop
1030	270	68			228	
1033	160	40			238	
1034	220	54			241	new Fe

163 Empty 1.7 5.6 / 1 / 39

full 5.6

Nickelsocle formed by heat
graphite 3.7

passing in plate of Graphite —
the grid —

	gozo	right	dump	6 sm in over on Day

By reversing ~~many~~ ~~Quick~~ letting it go 10 or 15 minutes [illegible] in Rebop + Op. the amount of C [illegible] increased greatly, but the [illegible] to metallic state + acts with a [illegible] grid as the OXD. be metal.

605	320	98			3rd peg
610	202	86		17	
615	191	82		33	
615	280	70			
620	222	56	90	54	4th peg
625	100	24			

164 Empty 1.75
full 5.4

Dehydrated Heidelberg lot No. 1 b 02
not powdered

graphite

after dehydration powdered
+ moist with KOH before
pressing as it would press without
KOH

plate

1047	387	96			48	
1054	322	80			42	
11	242	60			42	
1106	142	35			42	off

7/2

185 Empty 1.7
4.7

Bicarb boy lost Mi Hydrate
pow pressed before dehydration
used low temp

Graphite
mixture with KOH,

Pressed pellets 2" long

250	390	97	122		
255	335	84.2	110	80	*
300	150	38		60	
305	138	33		62	
310	120	30		73	off
					2nd
734	350	85	122	63	
745	310	75	104	88	
750	300	76		88	
755	283	73	104	113	
8	210	54		154	*
805	147	38		147	off 3rd
104	350	91			
110	330	62	108	35	
115	312	79		67	
120	302	76		88	
125	285	72		112	*
130	250	65		135	
135	150	38		152	
136	250	38		154	new Fe
140	165	42		168	
145	150	38		181	
150	122	31		192	off

Very Little Swelling

186 Empty 1.7
full 4.95

Big lot Hydrate Mg very finely powdered, then thoroughly dehydrated — graphite wet Rotti 73

pressed plenty — broke — good deal comes out

807	340	87		16	Been on all night —
810	290	74			
815	210	52		37	— ng —

Always amount of Cement of grid

187 Empty 1.65
full 4.65

Phosphide Nickel Ni_3P_2 7/3
(under charcoal up stairs)
Graphite 1.55 wet Ni

Weighed KOH pressed plate
Heated gas for 1/2 hour - melting comes
out well —

730 732	360 120	92			off — Has swelled Considerably
243 250	340 52	84			
928 930 940	320 213 192	80 34 39		39 32	Swelled Considerably off —

188 - Empty 2.75
full 5.05

powdered by lot of 7
graf 3

Moulded in plate & plate dehydrated
chrundesse dent trough ~~[illegible]~~
c Edges grid - had been grid in
quite dont make good Contact
Often changing 1/2 hour it went
to Zero Materially

It was moulded KOH before
pressing

Dont make Contact or else inert

159 Empty 1.75
full 5.95

Anhydrous Ox. Nickel boiled in Hypochlorite Soda, washed & dried 7

graphite 3

Very heavy graphite shows in excess I am reversing it 100 times

pressed plate, moistened KOH

5.95
1.75
4.20
7
2.90

I put it in KCl with some KOH
Blue hydrate squirts out —
also Zn's go where it squirts
only gave on 4th peg after
2 hours ox .35 Vol 80 MA

Ng

190- Empty 1.6
full 5.9

fine wirescale from pulling
in tin plate, getting red or
pulling out & bending to get
scale, scale very thin
producing thus 200 sheets

8

Graphite

2

pressed plate Wrigland Kott

191 — Empty 1.65

full — 4.7

Acetate Excess KOH melted
put in — very light color 7

graf 3

plate, most KOH —

904	330	88		
912	282	72	42	
925	110	28	84	— off —

192 Empty 1.457

full 4.155

Nitrides Ni

grey 3 16 plate

plate - most Roth.

743	350	88			4th peg
752	290	73		48	
800	270	68	100	86	X
810	160	40		122	
815	254	48			new Fe
820	154	40		134	
825	135	34		148	
				100	off
	2nd				
941	120	107	114		2nd peg
945	113	102	111	79	
950	113	99	107	78	
955	110	96	104	76	
1000	295	75	96	45	4th peg
10	277	70			

NG

874-43 -
in KCl with some free KOH.

945	650.		
952	540	49	
905	385	35	

193

405	147	129	140			
410	137	121	132	12	11	
415	130	116	130	23	14	
420	130	114	128	34	14	
426	127	112	126	46	14	
430	123	110	124	50	14	
437	121	107	122	69	10	
443	115	102	118	81	16	
445	120	107	126	85		new Fe
450	102	90	116	95		
451	90	78				off

193

415	54	50	60@50	88			off
			Fourth				
535	127	110	123			8	2nd peg
605	115	104	113		26	9	
610	112	102	112		35	10	
615	111	100	110		44	10	
620	110	99.4	109			10	
621	130	120	130		54	10	now 7s
625	130	119.5	130		62	10	
630	130	117.8	129		72	11	
635	127	115.7	128		84	12	
640	126	108	125		94	17	* 94
640½	98	90					
641	76	70					
642	70	65					
643	68	63			98		off
			Fifth — Begin overall night				
718	143	128	140			12	
730	127	114	126		27	12	
740	112	102	114		47	12	
745	111	99	112		50	13	
750	110	98	110		60	12	
755	109	96.4	109		75	12.6	
1805	101	90	100		92	10	
809	70	65					
810	70	64					
			Sixth time				2nd peg
1117	135	119	128			9	
1125	131	106.5	115		17	7.5	
1130	126	109.2	114		28	9.8	
1135	116	103	113		38	10	
1145	113	100	112		57	12	
1155	112	96.5	110		72	11.5	
1204	108	85	108		82	13	
1208	95	82			100		
1210	93	72					
1211	73	69					
1212	63	59					
1213	53	44					
1214	53	47					
1215	53	47					
1215	118	101					4th peg
1216	113	28					
1217	108	27					off

193 Simply full! 1.55 2.85

Molten KOH into Conc acetic acid acetate in excess — 3.15 1.15

Prof. —

Thousand KOH pressed pellets — 37 grid

it's with women!

			Fast				did
1203	260	114	124				3rd peg
1205	223	99	116		8	17	
1210	190	92	110		25	17	
1211	100	40			27		
1216	86	58			34		
			Second				
1235	245	109	124				2nd
1237	200	109	116		7	16	3rd peg
2	155	98	112		17	14	
201	212	92	110			15	
203	160	92			33		
204	160	86			41		
208	207	88					
210	207	87	108		48	21	
213	180	72			88		
215	100	45			84		
			Third				
327	137	120	130			10	2nd peg
330	125	111	121		6	10	
335	120	107	116		16	9	
340	117	102	114		26	9	
345	116	104	114		35		
350	113	102	114		45	10	
355	112	101	111		54	10	
4	112	100	110		64	10	
405	111	96	110		73	12	
410	108	85	108		85	22	

Bad Cut

off

752	143	127	139			
8 —	126	111	128			18
815	113	100	122			48
820	103	92				57
820	118	106	126			67
825	117	104	—			76
830	113	100				83
835	110	96				
836	119	104				
840	117	104	126			93
845	114	102.3	125			103
850	114	102				112
855	112	99				122
9 —	103	88				131
901	90	82				
902	80	72				
903	90	60				

new Fe

new Fe

113
100'
Thermometer
the much

194 —

Empty 1.55
full 2.95

Same as 193 .98 MOX

Bath is reduced in water into which a tablespoonful 20% KOH in to prevent swelling

3rd run as after Gang in Reg KOH,

1120	213 —	94		3rd pay		Smells scarcely any 1st
1121	93	36		off		
216	130	114	124	2nd pay		2nd
220	100	90	9	off		
221	60	54				
		3rd				
1010	133	117	124		7	2nd pay 3rd
1017	110	96	103			new Fe
1019	148	130	140	18		
1025	132	116	128	32	12	
1030	124	109.5	122	43	12.5	
1032	117	102	119	53	12	
1052	110	96		85		
11 —	105	92	106	100	14	
1105	50	46				off —
		Fourth				2nd pay
3 —	140	123	136		13	
305	120	105	114	11	9	
310	113	100	112	20	12	
317	108	96	109	33	13	
320	106	94	108	35	14	
325	103	92	106	47	14	
326	127	113	132	48	7	new Fe
330	123	109	128	59	19	
336	122	109	127	69		
341	120	107.2	125	79	18	
345	120	107	125	97		
350	120	106	124	97		
355	117	104	123	104		
1 —	114	102	122	114		
101	106	94				
102	98	79				

Notice that there is scarcely any swelling even after 2 off —

195 = Empty 1:4
full 5.05

Only NiO - big bottle, 7
graf 3

Most KOH, pressed plate
1/16 grid.

1255 Red -
1256 gas

1/32 grid

1/16 Empty 1.6

full 2.8

Ni Hydrate from melted KOH — acetate

plumbago 2
8

Moist KOH & ground so can see only graphite —

pressed plate 200 atmos.

5 11	123	112	122		10	2nd peg
5 45	95	88	112	12	21	
5 55	84	77	110	20	40	off
		Second —				
8 10	141	124	140		16	2nd peg
8 15	117	99.5	130	10	29	
8 20	100	88	126	19	36	
8 25	90	80	124	29	46	
8 30	83	75	122	3/4	47	off
5 52	140	124	134			
5 55	116	103	132	6		
6 —	100	85	130	15	42	good diff bet Volts —

off 1.9

3.25
1.6
1.6

1/32 grid

197

Empty 1.6
full 3.25

Ni Hydride from Mother KOH in Acetate
grafts 1 pt
1 pt

ground so only grafts shows used
KOH from oven.
plate pressed 300 atmos
it little thicker than 196-

				Sat	Dif	
534	130	118	123		3	2nd pg
537	102	92	119	26	23	
540	80	73	112			off-1
Second-overall night						
832	140	125	138		13	
840	110	97.5	126	16	28	2nd pg
843	91	81	124	23	43	
850	80	70	122	32	52	off-

198 Empty 1.6 $\frac{1}{32}$ gred
full 3.05

Mixture Mullin KOH in acetone 9
graphite

ground with KOH to moulin
+ only show graphite,
then mixed 2 pts. graphite
20 or 30. but not ground only
mixed. plate pressed
broken

955	137	122	136			
855	130	115	126		71	
905	117	103	120	20	23	
910	110	97.3	116	30	19	
915	102	90	112	30	32	
920	87	76		47		off

1/16 grid

199 Empty 1.3

full 3.3

Mr SOH dehydrated & shaken with pyridine 7

graft 3

Moorhead KOH, prepared

922	323	81	110	moce night
923	145	97		4th pay

Mg

+6 grs

200 Empty 117

full 419

Peroxide made by using
Cadmium Acetate (Potash)
Hypochlorite (Chlorine)

Graphite

Moistener 50% KOH

Pressed plate

925	300	76			
930	260	66			
940	110	26		23	off ng

201 Empty 1.6

full 2.85

good acetate Walter Kopf. 7

Grafoto 16 on 20 by Eko. 3

greases dry –

Crosshatch came out good when put in solution,

150	140	124	135			11	
155	130	100	120			14	off –
157	90	80					

202. Empty 1.6

— full 2.9

good acetic Mother Root

graft = 16 oz 20 by plate 7/3

Nurse Roth

201 - Lots came out [illegible] dry

202 Very little [illegible] came out of [illegible] - no [illegible]

always [illegible] meeting so [illegible] thing

5	142	126	134		8	scarcely any swelling
5-5	130	115	124	11	9	
5-10	110	95	112	21	17	
5-13	100	86		26		off
5-15	80	79		28		

203

1/32 grid
Empty 1.65
full 3.00

Espresso Malten ROH into crucible ni 6
Graphite 30 on 50 4
Monel ROH - pressed plates, 8 of nio

140	130	131	144			2nd peg
146	130	115	128	14	13	76
147	60					
125	135	118	130		12	
132	116	103	112	10	9	
133	112	108		17	8	
135	112	98	107	21	8	
5140	108	98	104	30	8	
5145	106	5902	104	39		
5147	50	47				off
1122	140	124	138		14	2nd peg
1127	113	100		32		Running
4513	50					

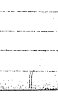
204 Empty 1.65
full 3.15

Acetate made from excess Molten KOH
dried, then put in 20% KOH
+ granular residue washed + dried. 7

Grafoil 30 in 50 3

Washed KOH, not ground
Moulded by 5 crew press
plate 52/1000 – after potin
4 yr later measure 61/1000

1002	124	112	120	16	8	
1010	137	102				
1015	112	100				
1020	110	97		43		
1030	105	98		52		
1032	103	93				
1033	122	116		80		new Fan
1045	60					off –



7 + 3 graph 1/16 grid

Nitrids of Iron with Zinc

Open circuit 1 Volt

moulded plate .62 on 1.6 ohm

.34 on .222 ohm 125 ma

Nitride Molybdenum 7

moulded plate graph 3

70 ma on .7 ohm .64 Volt,

125 ma on .37 ohm .53 Volt,

pretty steady,

after being on .37 for 3 minutes

going to .7 gives 65 ma .6 Volt,

.20	.65	.60	.66 steady	2nd pt
.24	.64	.58		

Nitride Boron

.78 ohm 30 ma .27 Volt

neg

205 Empty 1.65
full 3.4

Cobaltous hydroxide 7/3
graphite
Monsanto Rod,
pressed plate.

613	133	118	126			8
941	92	83				
945	82	74				
		Second Run				
139	138	124	133			
155	103	94				off
153	20					
513	140	132				
547	117	103				
530	107	93				
553	87	76				
	131					
920	147	131	141			
926	95	84				

206 = Empty 1.65

full 3.85

Mixed chromate 7

graf 3

pressed dry

1st 118
2nd 127
3rd 123

Beef yest

1150	120	106	120	72	14	
1155	113	100	112	82	12	
12 —	102	95	106	92	11	
1205	106	94.2	105	101	18	
1210	103	94	—	110		
1215	102	92	104	118	12	
1220	97	86	104	127	18	* off
1225	88	46				
325	140	124	132		8	
330	128	107	114	11	7	
335	113	106	109	26	9	
340	134	120	134			
345	130	116	130	39	14	new Fe
350	123	110		50		
355	109	96				
355	138	118	130			new Fe after mp
400	130	116	130	77	13	
410	129	115	128	72	16	
420	123	110	126	113		
425	110	86	—	123		*
1253	135	127	138		11	
12 —	130	114	126		12	
1207	113	106		29		
1210	111	99		39		
1215	110	96		44		
1220	115					
1230	114	102				
1236	109	95		54		
1237	132	116		58		
1245	128	114		73		
1250	127	112	126	83	14	
1255	126	110.5		93		
1 —	122	108	124	103	16	
105	120	105		113		
110	112	95		123		
112	102	89		126		*
113	91	80				off

84/1000

3.25 / 2.8 / 1.6

207

Empty 1/32 grad 1.65

full 3.25

1.16 1.12 1.03 1.00

Hydrolated Pepsin is by acting on bog lost hydrate with Hypochlorites

graf

Pepsin dentzwell in KOH, yes it does.

Moslem KOH, pressed plate

1133	143	127	136		9	
1140	130	124	132	16	10	2nd Run
1145	133	120	130	39	10	
750	131	118	128	58	10	
755	130	117	128	49	11	
8 —	130	116	127	66	11	
805	128	113	128	71	11	
810	127	114	125	81	11	
820	123	110.5	123	102	125	
825	121	109	122	115	14	
825	111	100		115		
829	95	80				
830	64	58				
831	62	56				off
		Second Run				
1116	135	120	126		6	
1120	122	105	—	8		
1121	148	130	138	10	8	new Fe
1125	133	119	128	19	9	
1130	129	115	126	31	10	
1135	120	106	114	41		
1140	113	100	108	51		
1140	122	117	126		9	
1145	123	110	127	62	14	new Fe after 6d

1.59 / 1.52

On all nights

88/1000

$\frac{20}{40} \times \frac{1}{2}$

$\frac{20}{40} = \frac{1}{2}$

40

20

10 — $\frac{1}{4}$

$2\frac{1}{2}$ $\frac{1}{4}$ of a gal. each

4 grades 1

$4\overline{)3.5}$

14.0

14

110. lbs grades

125 lbs

150

275

12 lbs 002 1400 pieces

28 million

124 thousand

Notebook, N-01-01-18

new Book

January 18 1901

208 New style -

Rogers pepperbox perfter,

Took percy ni + pressed it in press to a plate then took piece rogers + load w/ mould burr up - laid ni plate on it then put a Rogers on top of plate burr side down then pressed whole together -

Then is put into a ni punched pocket,

Freddy says holes in Rogers closed up - what one he is going to grind top burrs off so the holes wont close

Empty grid 2.2

Wt of Ni + 2 Rogers 4.35

Wt of 2 " 1.65

2.70 wt of plate of Ni

NiO 7 pts

graf 3 pts,

Mouted with KOH

Size plate $\frac{11}{16}$ X 2" $\frac{42}{1000}$ thick

1st Run —

427	140	124	134			16
438	127	114		11		
444	111	99		35		
451	62	54				
903	134	118	130			
910	114	102	112			
915	112	99		20		

$\frac{1}{32}$ grs

209 Empty 1.45
full 3.15

Hydrate Ni big batch,
boiled in water KOH
drab colored —
grey

7
3

Monster KOH, fused plate,
This stuff dissolves & is
changed metrically by hypochlorite
to peroxide —

210 – Empty 1.55 $\frac{1}{32}$ gm
full 4.25

Nickel scale made in muffle
– furnace.

7
3

graphite –
ground fine, moistened KOH
Moulded plate

4.25
1.55
2.7

No Wash only
Little

1148	117	103		281		
1140	90	78				new Fe
~~130~~	~~[illegible]~~	~~56~~	~~116~~			
133	120	108	116			2th per
135	120	107				
137	150	138	145			new Fe
140	137	124				
148	129	109.5				
2—	114	104	112		8	
210	116	105		76		
223	114	102	110	101	8	
235	118	100		124		
245	111	100	109	142		
305	109	98		175		
317	1018	97	107	192	10	
321	10	9013		208		
325	134	130	180		10	new Fe
330	130	1163		224		
335	127	113		239		off
411	128	114		251		
419	110	97		—		
425	106	94		261		
430	104	93		270		
436	99	86		281		off —

* — but two wide plate then those in 32

swelled to 160/1000

6.90
2.15
4.75

211

Empty 2.15
filled 6.9

Wide plate — Extra wi plate 1.6
P&r of plate alone 3.15

Same as 208,
except plate 52/1000 wi 7+3 grad

+ Paroxide was washed
well again dried —

The Rogers has ends filed
off - as they dont close 22 Rivets
up holes

plate pressed 1st 150 atmos 1.4 hour wi

then when Rogers put on
300 atmos —
measured Kott

918	130	113	122		9	
930	118	10413	112	24	7.7	
940	114	101	108	47	7	
950	112	98		69		
950	143	125	134		9	new Fe
10—	133	118	128	80	10	
1015	112	9913	107	114		
1020	111	98		125		
1030	111	98		142		
1035	110	97		157		
1050	110	96	104	178	8	
1055	109	96	104	187		
11—	108	95.7		196		
1105	107	95		205		
1115	136	127				new Fe
1112	131	118	128	221		
1120	130	114		238		
1130	116	106		259		
1135	115	95		269		
1140	105	92		278		

157/1000

212 Empty 1.6

full 3 1.4

Crystalized Hydrate [illegible] 7

Graf 3

Moistened KOH 1/32 grs

pressed plate plate 35 | 1000 thick

I notice 194 dont swell so I have put this in water with few drops KOH + let her go all night

7.45	124	110					
[illegible]							

Found that above no improve + but came out in outside of grid —

213 Empty 1.6 $\frac{1}{32}$ gm

filled 3

Big Lot Nitrate Boiled 2 days 3.7
Graf

Neutralized water, ground fine.

Ox w ½% KOH, pressed plate.

~~[illegible]~~

150 / 32	145	126 / 60				

927	122	110			
906	112	101			
945	106	93	106	33	
950	100	88		41	
955	90	82		49	
960	87	77		56	

off

214 Empty 1.5

full 2.7 Impure

Peroxide gr 3.7

(Moistened) Water, pressed plate
33/1000 thick

I notice some green comes out also some black which was probably once green
only to conclude of ~~[illegible]~~ — ~~[illegible]~~ — Peroxide impure.

1147	140	120	132			
1148		160				
1215	132	114	121		7	off
1220	120	84				
1258	133	118	124		6	[illegible]
102	112	95	105	8	7	
1045	95	86				new Fan
1055	120	104				
106	100	88		14		off
1145	147	138	140			
1154	90	80				
1224	138	123	130			
1230	122	105	115		7	
1235	119	105.5	105	23		
1240	114	100	110	33		
1241	128	114				
1250	103	92				
1255	83	74				

60/1000

new Fan
off at 11 pm time
20% KOH

410	128	119		85		
420	103	111		100		
421	85	119				off

Considering the wear this of fair —

72/1000

Widzplate

215 = Empty 213
full 5.

Extra nickel plate before processing per 113
peroxide plate 114
(1% peroxide 7 graf 3 monstene) with water —
This is two Rogers plates with burrs aft - faced and rounded) in plate
plate before going on grid faced with Rogers plates. 138/1000

Grid with plate in 47/1000 —
1% KOH, after 2 hours put in 1% KOH, after 2 hours put in 1% KOH 6 hr 38/1000

After being on all saturday night goes on few min - & put it in 20% KOH Sunday night 515.

118	133	118	126		8	
125	118	101				
135	150	132	143			new Fe
130	132	117	127		10	
150	127	112	122		10	
125	118	98	108		10	
110	60			97		off
128	148	133				
140	131	118		27		
130	124	110		145		
120	112	98		65		
102	136	121		67		new Fe

grid Caliper per 49/1000 filled

216 Empty

Drop of 215 – no hot etc not
pled or dried in in 215

filled Empty 2.2
51.15

thickness with Rogers plate 40/1000

Leaving peroxide plate 32/1000

Wide plate

peroxide 7
grafts 3
Moreseaned with Water

Put in 2% KOH + 3 ounces it will double more than 215

004	136	120	130			
010	50	44				
933	136	120	130		10	
940	120	107				
947	115	104	113		9	
956	114	101				
003	102	90		55		
006	69					

good deal of stuff
Comes out

put in 20% KOH
1030

217 Empty 1.65 1/32 gra
filled 2.80

Nio xidz Ni_3O_4 7/3 made by Chemist

graft

pressed dry

plate 30/1000 — Blue piece comes out slightly purple

Impure lots green H spirit comes out

12	122	100	118			
117	90	80			9	

115	100	96				
115	100	116				new Fe
120	123	110		131		
120	122	108		141		
130	117	104		138		
135	110	97		160		
140	99	94		168		off

120/1000

Ni_2O_3 to NiO_2
3.4 gm per ounce

Wide grid

218 Empty 2.3
full 6.250
Callipers 58/1000

Rogers plate armor 48/1000 — wt 1.3
Ni peroxide 40/1000 " 2.165

Ni peroxide is made by making a warm dilute solution of sulphate of Nickel & precipitating by an Hypochlorite. Washed on filter only - dried all night on steam bath & ground fine. pressed plates moistened 50% KOH, put right in 20% KOH

Ni_2O_3 grid 7 / 3 — old plate 8/16 wide
This " 11/16 "

	132	125	135		10	
06	130	115				
15	115	101				
27	60					off
48	138	132				
—	130	118				off from 11 till 1224
224	133	118				
238	111	100		54		
25	110	98		61		
26	110	97½		76		
35	107	93		94		
05	106	94		105		
05	122	110				new Fe
05	117	103		113		

N
Ni_2O_3
NiO_2

219 — Empty 2.125
full 15/1000 5.8

Rogers armor 42/1000 1.4
Big lot Hy M treated twice Hypo.
just time ground fine —
good 7
3
moist KOH 15% pressed
M plate alone 34/1000 — 20% KOH

4436	132	119	123		4	
4446	120	107	114	30	7	
4451	116	103	110	30	7	
4463	113	102		38		
5—		100				
5—	137	122	132		10	new Fe
505	130	117.5	127	38	10	
511	130	117.5		71		
516	127	113		64		
524	126	111		1000		
532	123	109	122	110	13	
540	114	102		130		
543	110	86		136		
548	128	113		134		new Fe
550	122	108		157		
553	120	104		161		
6—	100	90		170		off —
756	134	120	140			
806	133	120	130	18	10	
813	127	114		27		
825	113	102		57		
830	111	102		69		
831	130	116		69		new Fe
840	125	112	124	88	12	
851	119	106		110		
855	114	102		170		
857	125	112		170		new Fe
1020	128	105		136		
1010	107	94		146		
1020	97	82		154		

56° 7/15 7/13

95/1000

lost some

Ferrate of K dont work well as deplz in deland

Ferrate Barium gives 2 V @ .30 V
2nd pcy with Zinc after 20 minutes
deland

220 grid Empty 2.125

filled 54/1000 6.17

Rogers plate 46/1000 — 1.5

~~from~~ " 38/1000 2.95

new 7 -

graphite - 3

Thus scale ~~of~~ made from
Lense plate ~~of~~ in Whipple
Sevenoaks Observ. Big Lot
Moist with 50% KOH,
pressed + ashwood ~~with~~ Rogers
grid + put in Reg grid
Wide plate,

452	123	118				
1	110	87				
525	100	56				
515	76	69		30		off -

Been out at
all night

221 Empty 2.25

filled Cadaplex 61/1000

Rogers permanent plate 52/1000 1.6

Bagletty percoll 3rd time. plate 44/1000 2.55

" " Graf— 3 pts

Monolmed 50% Roff

142	143	125	140		12	Crookcumbles
210	127	113	124	63	12	Commencing grid
213	124	112		70		by crinching
220	122	110	—	80		
225	131	109	120	93	12	
235	127	104		115		
240	113	108				
240	120	107		123		new Fe — ng —
254	85	114				
253	127	114		150		new Fe
3—	126	104		160		
305	113	101		170		
310	100	91		179		
315	98	84		182		
320	93	82		195		
323	93	90				new Fe
323	90	90				off

101/1000

222 Rogers on. nitrate 55/1000

~~Wt of Pap~~

actual wt material 2.35

Perox by hypochlorite from big lot
hydrate 4th trial of Hypo.

It was too moist with 50% KOH,

3 pts Perox of
" graphite.

made this
wrong

740	140	124	133		9	
746	130	119				
753	122	108	120		12	
802	110	96				
805	137	120	132		12	new Fe,
811	126	114		65		
815	128	112.5		73		
820	126	112		64		
825	124	111		94		
834	122	108		141		
853	119	106		161		
903	118	104.5		172		
910	117	103.2		185		
920	113	100		204		
930	103	91		221		
934	80	72				
930	82	72.2				
						new Grad
						7 ft Run
1257	140	132				
115	130	119	126	40	"	
130	123	112		72		
140	121	107		93		
151	113	98		115		
2	107	94		181		
223	87	77		168		
245	82	74.7				

pby too moist
by alkalinity
to the Mt

926	143	128				219 114
935	130	116			48	
955	124	112			64	
1005	109	93			83	
1015	104	94			101	
1025	100	89		102	118	114
1030	95	84			126	
1035	90	79			134	104
1043	162	54			144	
1053	120	106			146	
1050	112	98			155	
11—	103	92			173	
1105	102	90			181	
1110	97	84			189	
1120	85	571			208	

avg 117 4/10 dollar

new ni 222.

off

1/32 grid

223

This is non scale from Norway iron
got very hot & hammered,

grid Empty 1165
full 315

7. 8
grap 2

Measured Kelf 50 1/2

Broken 3 pieces, very brittle plate
And not like others, both come
out grid —

347	130	116	130			226 ni —
356	124	112	128		17	
405	120	108			43	
415	119	106			57	
425	119	106			74	
426	137	124			94	new ni
445	120	106	122		114	
455	119	92			125	new ni
450	127	114				
5—	123	112			134	
515	126	106			164	
520	111	100			174	
525	104	94			182	
530	103	94			191	
540	101	92			208	
545	100	90			216	
550	98	89			225	
555	98	88			235	
6—	96	88			241	
610	93	86			257	
625	89	80			274	
635	77	70			286	

fine —

off

Reg 1/32 grid

224 Empty 1.65

filled 46/1000 31.75

Mercury from Acale high heat 38/1000

Fe 8
Graf 2

Mercury 50% KOH pressed hard - with Jessen press -

with along Current commercial Chromium ant, reduced Ct -

822	125	113				
830	120	110	122		12	
840	116	104		36		
845	100	88		45		
850	93	84		45		off

1/32 Reg grit

225

Empty 1.6
filled 4.15 feed 55/1000 –

Scale from Norway Iron at
Melting heat 8

Graf 2

Moist 5% Kott, ground very fine
mixed in screw press
broken.

1.82	122	109				
2.03	70	60				
2.04	140	125				
2.10	132	120		29		
2.15	128	116		40		
2.22	122	110		75		
2.52	102	91		109		
3.00	98	84		125		
3.12	92	82		157		
3.22	93	99				
3.27	118	114				
3.32	102	90		189		
3.40	80	72		204		
3.45		after melt night				
3.05	138	122.5				
3.20	123	111		32		
3.32	113	100		62		
3.40	110	93		71		
3.41	122	114				
3.52	110	98		92		
4	107	94		137		
4.05	104	92		157		
4.14	104	89		132		
4.24	115	102		148		

now 1st 219

now 1st 226

Lamp on grid – ng ammonia
Nickel st –

now ni

now ni

Bright periodical ½ times, then
~~stained~~ stained with ammonia, filled out
Washed with considerable Ni ol
Something came out,

Empty 2.7
filled 5.8 46/1000

Ni 7
Grey 3
Moistened 50% KOH
Rogers plate 40/1000 16

pressed moisture proof

952	146	130	142		12	
921	129	116	127	20	11	
920	108	94		57		
921	130	114	132	102		
940	80	72				

new Fe
—000—

Dontcare to 62 good

Two or ng

227 Empty 1.135 $\frac{1}{32}$ grid-Rey

filled 4.1 56/1000

Tool steel scale 47/1000

Fe_2O_3 8

grid 2

Mount KOH 50%

Screw press only been on 40 min 100 kg

605	137	123	134		11	1st
610	107	96		10		with 222 N'
615	100	90		19		
620	97	86		27		
630	90	72	80	42	x	
						2nd
943	140	125	134		9	to see Swarmbly
944	off					
2/15	124	114				
130	100	90		22		
135	100	88		30		
148	85	50		43	—	
153	82	74				off

1/32 Reg grid

228 Empty 1.15

full 4.05 58/1000

Cast from scale 50/1000

of 8

Graf 2

Moulinet 50% Kolk

Sinewpulser

742	140	126	138		12	
730	127	115	123	11	8	
5	107	96		30		
X10	108	90		46		
815	97	87		54		
820	92	84		67		
825	88	80		69		off
1123	151	131				
1147	130	116		50		
12	110	97		71		
1203	123	111				Bypassed 1st
1222	109	96		108		
1235	108	94		131		
1248	83	74		162		
1255	69	56				

229 New Big grid

Emptied 4.8
filled 4.16 – 40 / 1020

Big lot 4th time Hyp-no NH_3 –
sprinkled twice
4.4
mothered KOH 50%

250	132	134	144		40		
307	129	114			65		
315	127	110	122		75		
325	126	97			104		
340	109	95			122		
350	104	95			144		
402	105	90	100		174	10	
417	99	90			187		
425	90	82			157		new Fe
no plunger
426	117	104					
435	70	62					

16
46/8
21

1/32 grid

230 Empty 1.165
Full 3.165 4 pieces

[illegible] steel [illegible] defl on rail
at high heat ground [illegible]
[illegible]

8/2

[illegible]

400
144
2.75

231.

132 [illegible]

145

Bows

435	147	122	144		
447	136	127			
510	130	117		56	
510	127	114		78	
522	121	105		102	
530	108	96			
537	120	108		120	
547	104	94		144	
551	102	92		159	
601	97	88		167	
619	70	60		187	
302	132	118	143	78	
340	114	102		96	
350	112	100		118	
402	110	96.5		136	
412	107	94		153	
425	95	88		168	
433	60	50			
434	130	116			
446	115	104			
450	115	104			
5	110	97			
510	110	97			
520	104	92			
530	102	90			
540	95	84.5			
550	94	82.5			
552	85	73			

Thursday 24
to finish pin
May Monday for
1848

+66

Big nickel plate –

25	190	
35	201	
52	220	
72	236	
88	256	
105	273	
121	289	
137	307	

55

Notebook, N-01-01-01.1

Transferred from other book —

231 —

229 Ni big plate

T—	mo	closed	open			
947	80	140	164	38		1st peg
917	72	127	132			
943	70	124	127	92		
1010	67	122	125	125		
1025	67	120	125	149		
1035	67	114	124	159		The Ni is for one that gave out —
1047	64	115.5	126	149		
1120	59	106.3	118	177	x	
1120	35	62	85	193		

229 Big plate

Lost in 3 days heavy

overcoty 6% of its off

These probably only from outside —

924	138	126			33	
946	112	101			58	
950	110	99.5			76	
1005	105	96			104	
1020	102	92			129	
1032	96	86			158	
1037	92	79			173	
1105	77	70			175	
1123	67	61			178	
1135	60	54			200	new Fe
1135	50	75				
1205	62	56			248	
1230	52	47			268	66
1142	133	129	190		21	11 Fe321
1152	128	119.5			74	
1218	115	105			166	
1237	100	90.3			154	
110	90	65			196	new ni 24 hour low ct
1112	107	97				
1127	98	90			222	
1213	96	87			223	new ni high ct
183	88	84			234	
225	112	101			234	
210	102	93			268	
236	94	85			315	
310	42	38				

Been on

725
4.90
21.34

This is good

234

232 grid empty filled 4.9 / 7.25 50/200

Lungpot

Na_2O_3 permanganate K process

(note Mr Freddy has got them mixed in this is Hypple process & 233 is permanganate)

Na_2O_3 grad 7

moistened 50% ROH screw press in nickel box pressed in frame

507	76	136	142		6	1st pag
527	167	120	126	24	6	
560	125	110	122	47	12	2nd pag
543	109	96		58		
6	103	92		84		
601	97	85		113		
632	74	66		134		6/6
920	138	124	134			2nd pag
932	114	103		25		
952	104	94		61		
1005	102	94		84		
1015	98	88		100		
1030	90	82.3		124		
1042	82	73		141		
1102	66	60		166		

all night 5 pings out

825	147	133	143			10
841	130	118		37		
900	105	96		74		
920	73	66		103		

5 pings
2 pings

25th

233 Empty filled 5+3 8.05 5P/100

N_2O_3 Hypo process (note - this is probably ~~gum~~ permanate process as liquid turned green from Wednesday to Friday, pt 232 + 233 mixed)

N_2O_3 (Washed free chloride of Hypo) 7 3 graf

Measures) Kott 10% - in 0.02 hi pass pressed in frame by accum press.

420	78	141	146			5	1st peg
454	73	130	134			4	
450	70	124	136	367		6	
520	82	76		52			
830	152	136	148				
900	120	109	124	68			2nd peg. all fluff in
915	93	77		93			
920	73	65		100			off
315	142	125					
335	108	97		40			
336	138	127.5					action of bar
347	121	107.5		64			new Fe
412	71	65		100			all plug in

2304229

1105	147	137	142			
1228	48	44		135		

234 empty 1.55 52/1000

full 3.30

Peroxide made by dosing Sodium with Hydr. leaving 1 hour & then filtering & then boiling for couple hours, then filtering & washing with Hot water (most all Chloride out) — Dried & then put in Evap dish & brought up to very 4 @ 500 deg fahr —

TFE

Grey

plate — moisten with H_2O —

315	138	125.5	134			off
330	30					
539	144	130	143			
546	116	100		15		
547	90	on going down				off
810	148	131	144			
825	110	96		32		

Plumbate Calcium (Kassner)
1/16 grid 7 plumbate 3 graphite
Zinc in KOH 20%

1st peg Volts .70 amp 37 333 pm

4th peg				
338	230	594		
347	220	57		4th peg
400	210	54		
412	198	51		
421	190	49		off — 421
424	196	50		
440	165	42		now 2nd peg
440	62	564		
450	60	53	wash	
500	58	512	220	off
510				
520	70	60	on	
521	50	43		

53/1000

235 Empty 1.45
full 3.00

Mercury 7
graf 3

Sat in prep by Hg poll with K — then filtered, then boiled several times + decanted, only little chloride or KOH — wash water — stuff after drying + powdering is gray 53

1052	142	128					
12	64	58					

46 — Scrolled good deal

Boiling probably decomposes it to gray amorphous

Ng

936 grid Empty 1.2
full 2 — 30/1000.

Electrolytic peroxide - was short of stuff
probably bad contact Considerable
came out grid — 7 pts Ni 3 graf

Monitored Water —

422	105	80				gas right down —
510	124	110				
515	58	50				916 most of the stuff has come out of grid in neck - fluid bump too small —
539	128	110				
550	40	38				

236 ½

To grid —

Peroxide (chemical) lead to plate
7 Peroxide 3 graphite 70/1000 Calliper
moistened water —

This looks promising — a PbO_2 Cathode
made pure so it will all reduce to Pb_2O_3
more will be obtainable in liquid —

			Mak				
532	50	144	152				1st P.C.
536	good	112	144				4th Pay
546	376	76	147	66			"
553	305	78	138	114			"
610	236	60	65	150			"
610	38	70					1st Pay
630	38	68		142			
657	38	68				off	
610	37	68					— off for night

So (on this cell) must be very heavy — Colonel —

Lead Continuously
deposited a reduced by Zn
on open cat MG

727	143	127	140			
743	128	114		35		13
752	126	112	123	53		
805	121	107	122	88		11
821	108	99		113		15
826	89	85		119		
830	71	63		125		
833	60	51		125		
81						

Effloresce smell of ammonia noticed

I am going to reduce the Nickel by reversing & afterwards reversing to account effect is —

615	132	120	135			
620	128	108		11		2nd peg
628	248	89				4 peg
633	232	71				
630	268	68		66		
635	220	56		79		
638	180	46		95		
638	80	72				
640	81	73		98		2nd peg
645	71	120		105		
647	50	70		107		
646	99	81				
650	95	24		111		new Fe
653	75	65		125		
						off

3.35
1.45
1.90

grid full Callipers 58/1000 —

237 Empty 1.45 —
full 3.35 — 1/32 grid
1.90

Nitrate Nickel deluite acted on by Calcium Hypochlorite, solution, 1 oz Stiff — used 4 jars washed clean — cold water — Stiff very black plate very hard — 7 pts grey 3 parts moistened ROH 20% —

658	140	125	138			
706	124	111	124	37		2nd peg
710	60	55		237		off
736	142	128	140		12	2nd peg
746	130	117	128	22	11	
801	118	105		53		
822	108	964		83		
836	104	93	104	118	11	
840	97	88		133		See 194 —
850	57	52				
155	137	130	144		14	2nd
2	138	120	134		14	
220	104	95		39		
234	104	94		63		
303	66	61		103		
311	47	42				
347	34	31				
224	133	119	130		11	2nd peg
233	110	98				
282	108	96		49		
307	102	90		79		
315	93	83		86		
325	72	64		104		

238

48/1000 =

Empty 1.35
full 3.6

Ferric anhydrous OX acted on by equal vols CO & CO_2 with heat
black powder, somewhat magnetic
8 pts FeO 2 pts proof

Mount 50% Rott.

855	136	121	140		19	2nd pcy
905	130	115	130		15	
923	102	92		57		
930	102	81		79		
935	98	87		94		
15	76	83		118		
1026	88	70		155		
1040	70	60		173		
1040	82	73				new ni
11	50	46		193		off
4	110	96				2nd pcy Seems to have got higher first
~~5 00~~	~~70~~	~~60~~				
520	70	60		120		
520	80	70				new ni
530	62	53		170		off

545	137	120				2nd pg 231 Refused
550	124	109		10		
557	105	92		24		
605	104	90		08		
610	102	90		46		
615	102	89		55		
620	100	88		63		
625	99	88		71		
630	98	85		80		
635	95	82.3		88		
640	88	78		96		
645	89	72		103		
650	70	61		110		
						off
838	114	102				321 blowing from 115 mark — 109 at 2 min
850	113	92				
905	89	78		43		
920	82	73		72		
927	111	99				raise to 230
933	102	90		88		
940	92	72		103		
952	70	60		112		
958	60	54		119		off

Calibrate 77/mod

a-V 47 84 on 1st pg

Reversed it to Reduce

Been 4 days reversed to Today

I now reverse to O/X —

Calibrate 77/mod

32 grid

239 Empty 1.3 1.60
full 2.9

Drop of 237 7 pts 3 pts
moist H2O — (0.03) in tests
containing only 1% of KOH, to
prevent swelling

405	120	108	119	6	10	3rd pg 4th pg
408	310	81	104	11		
410	240	76		11		
424	70	48		51		off
326	115	102				
337	103	92				
344	94	83		39		2nd pg
4	40	34				
835	125	110				used iron in mixing gives 125 mark
845	108	96				
852	105	82		39		2nd pg
9	102	89		45		
907	92	83		57		
914	78	68		64		
918	52	46				off —
133	145	128	142		.14	
140	129	114.3		16		
100	123	107.3		37		
135	112	96		46		
203	76	62		60		
210	74	63		70		
912	138	122				
930	110	93		35		
940	105	72		53		
953	76	63		74		
1	83	72		86		
105	67	55				off

1%

1%

1%

Mathews Quit because the scale

Vaupel in 20% KOH

400	111	98		95	
422	109	93		117	
435	109	93		1/40	6
441	109	90		150	
445	70	54			
				2	2.7 / 1.5
10—	144	127			
1011	120	104			2nd peg
1025	105	105			
1027	113	100			
1047	110	96		93	
1051	105	119		1100	
1105	103	98		125	
1110	105	86		130	
111	137	120			
1120	128	112		154	
1125	120	104		165	
1130	110	96		174	
1132	107	94		183	
1142	69	52		192	
10—	144	126		33	
1015	122	101		52	
1025	117	1035		72	
1030	114	101		7/90	
1045	112	99		109	
1055	110	96		127	
1105	107	94		150	
1120	104	91		170	
1130	100	88		186	
1140	93	82			
1146	85	73			
1146	135	118		195	
1151	127	112		206	
1157	123	109		214	
12011	121	107		221	
1205	115	104		230	
1210	108	94		249	
1215	108	93		253	
1230	106	94		262	
1233	88	64			
745	134	120	142		
812	124	109	118		
824	104	94	110	78	
837	104	92		101	
855	102	90		132	
908	100	88		152	
927	78	86		172	

Dechlorinated good half KOH

2nd peg

143/1000 Sweetened

new Fe 231

to be off

231

2.32

143/1000

new Fe

about 265

10

1/4 1/4 10

Thus obvious large Reaction

See next page

1/8 plate —

240 — Empty 1.7

full 83/1000 4.6

Big lot which has been previously boiled & cooled — treated after it was dry with 20% KOH. Several times till yellow nearly gone then washed free of KOH, & dried — (It boiled well with 20% KOH. Later washed with 20%)

In this Case used 6 of MnO + 4 of graf as the grid is thicker —

20% Sol of KOH — Water — moistened with water & pressed very hard in screw press with 1 man along lever — plate very hard to + tough to handle — Dwells even in 2% =

212	120	106				2nd
215	110	96				
745	400	102				
745	320	94		18		4th peg
755	262	84		43		
755	260	84		63		
800	235	62		86		
805	94	87		90		
805	84	84		96		2nd peg
810	84	84		104		
826	82	82		130		
830	88	78		136		
833	84	75		143		
840	82	68				off
824	152	132	144		12	
845	114	103		47		
11	114	103		76		

927	95	86		182	240
940	97	93		203	92 V on 11th pg
959	94	83		219	
1005	91	81		242	
1015	89	79		237	
1021	88	77		266	231 del 243
1026	94	74		273	
1027	115	100			mm Fe
1028	77	72			to the mix Fe both
1029	70	60			
		240			
825	390	95			4th pg
826	350	80		6	
840	270	74		80	
855	137			123	
855	338	91			231 mm Fe
910	274	70	107	281	91 down on 10th pg
925	124	92		261	

1/32 grid

2.20

241 – Empty 1.145
full 3 65 50/1000

Hematite which we tried to reduce to ferrous but only want to mix with [illegible] 8 pts.
2 pts graphite –
Mondamin Kott 50%

215	132	117			
216	94	71/80	127		mm to the Fe that plug. –
	90				

231 has 295 –
+ gives 300 mesh
50 Scale on bottom –

446	100	87			106
455	97	[illegible]			119
456	97	66			
140	138	123			
150	117	103			40
200	110	97			63
205	101	86			84
231	98	46			
232	130	114			
245	78	69			107
135	143	126	136	10	
142	114	102			
152	112	99			84
203	108	95			
210	109	92			66
220	102	89			84
225	98	86			97
230	93	82			100
235	88	76			107
237	104	90			110
246	82	73			115

231 new Fe + Che Ni

2nd pg

90/1000

new 232

ammonium cit

to limit Ignes

should be 145 mole

new 231

31/1.7

242 Empty 1.4 1/57 gm

full 3.1 57/1000 1.7

Beg lot ni impregnated in 20% KOH,
attached - dried & Chem refining
dehydrated in Evap dish not
black but brownish —
Measured H_2O = ~7 pts graft to 3 pts
in 1% of KOH,

556	138	120		
	67	56	3	
1007	133	116		
1017	112	99	16	
1025	54	48		
1231	135	119		
1247	128	95	35	
1021	103	91	64	
110	100	88	77	
116	96	86	87	
121	93	84	95	
123	92	82	101	
130	87	77	109	
133	76	66	116	
137	67	60		
855	146	128		
9	137	120		11
905	131	115		23
910	124	109		43
925	110	96		63
931	106	95		80

2nd pg

Nova pat in 20% KOH

80/1000

Dehydrated 159

to 100 OK

See left hand page

243 — Empty 1.165 (to grid)
full 4.13 83/1000

Sulfur Not ok - dissolved in H_2O and by KOH + acid in over 3 days by Hydrogen well washed, then dried - after drying put in 20% KOH + soaked then KOH washed out, plate H_2O washed
6 of prev. 4 of graphite
put in 1% KOH
pressed hard

557	144	126			
601	128	113			
715	72	63		9	
845	112	98			
846	147	129	142	4	new Fe 231
856	130	113		27	
910	72	64		51	off —

Wrong put in 20% KOH

447	150	133			
506	138	120			
507	132	116		47	
524	128	112		75	
533	72	63		46	off

4 3 0
1 6 3
1 0

244 Empty 1.125
filled 3.135 52/1000

precipitated Nickel Sulphide
from Ni sulfate by NH3 Sulfide 7 pts
graf 3 pts

Moistened with water
takes O2 free –

113	128	111			
115	80	72			

Quite fearfully
29

245 Empty 1.55
full 3.7 .51/1000

Phosphide nickel Ni_3P_2 7 pts
grap 3 pts
Wet with H_2O –
Takes ox fine!

302	135	120	132		12	88 –
310	18	16				

Swells fearfully
Even if good
impracticable
Except perhaps it was
wkd in water sat
to stop swell –

246 Empty 1.5 1/32 grad

full 3.5 54/1000

Ni Sulfide ppt'd from Sulphate
by H_2S made neutral by
KOH
grad 7/3 pts

Moistened H_2O

New grid [11] Little ahead

247 Empty 2.6
full 3.5 49/1000

Sulphate or Nitrate Cant remember
Nickel acted on 4 drops over
Hypo
graf 3 pts

plate ½ X 1.13/16 long

This is not ground but granular
just as it dried out

732	143	127		35		
748	122	108		30		
804	62	54		60		
334	142	126.3				
340	105	94		27		
350	103	92		31		
355	100	85		39		
4	86	76		46		
482	55	48				

Swelled some
Less than 248

Not [illegible] shaded

off -
to be good
126 -
up

Don't seem to
be good as 248
both poor -

II new prod

248 Empty 2.6
filled 4.16 55/1000

Ni precip hypo 4 days same as
24 hr 7 pts
graf 3

Moistened water -
ground fine, to Compare with 247

505	135	122				
521	110	96		33		76
536	53	46				
1148	137	119				
1163	114	99		31		
1210	109	95		44		
1225	102	85		52		off
1225	52	40				
408	128	114				
421	108	95				
493	50	42		54		

Should give 1/3 rd

This is not good -
Can't bet the stuff -

Cyanide -

249

Cyanide Ni -
Ng - Zwells

1146	30					goes right down

56/1000 [1] 1 13/16

250 grid Empty 2.7 1.45
full 4.1.15

This is dehydrated Sulfate Nickel put in Methyl alcohol saturated with Stick Potash — then washed in water dries to light colored powder, dont Cake + a moulded piece dissolves well in 20% KOH or 1% —

1st put in in 1% but in 1/2 hour only gave 2 mah — put in in 20% KOH, then showed up fair — 7 pts to 3 graft

Notice holes in grid very small burrs not taken off good and plating would closed them — its now in field.

Some of the 1% KOH evap dehydrated

608	80	128				1st pag
609	77	116		2/3		
610	69	114				
611	40					1/8
753	70	126				1st pag grid apt + one side broken open
8	63	112				
805	60	108		7/13		
813	58	103		32/13		
846	58	67				

1/32 grs —

1.15
145
[illegible]

251 Empty 1.3
fuel 2.4

Sulfate Nickel ppt by Ammonia
dirty powdery —
gray 3

Monolenced H_2O

piece of well Crucible
bottom 1% KOH
[illegible]

all night in 1% KOH —
at 8 am put it in 20% notice there is
hot green inside grid can see it thro holes
There is not the slightest sign of well before I
put it in 20% KOH —

945	130	113			2nd exp
945	50				66
112	138	121			3rd exp
121	70	62			88 —
523	140	124			2nd exp
523	114	108			17
530	58	70	12		
	50	42			88 —
735	142	124			
745	85	74			

Not the least sensitiveness —

This is no good
its strange

[L] 1 13/16 long 1.10

252 Empty 21.6
full 317 51/1000

Sulfur in Methyl KOH – then water
contained 7 grafs 3

1st pressure 100 at 2nd 200 at –

123 135	131 od	114 o-p			

1/32 pid

253

Empty field 1.4
3.05 63/1000

1.65

Ni_2O_3 Hypo process washed free Chloride K
graf 4 parts Ni 6 pts
Monatomed water —

This stuff passed in plate + put in KOH 20% but out well —
in the chart —

1096	139	123				only been on Circuit four months
11—	130	114		9 —		
1114	35					off
1203	136	120	132		11	
1203	130	112				2nd pay
1212	100	93				
1212	98	104				1st pay
1218	49	68				
236	147	129	143		14	
247	127	109		25		
255	109	98		40		Think there is the
3	106	93		49		Manganite stuff
305	98	186		58		mashed + put in
310	70	63		64		curing bottles —
242	137	120				
247	123	111				
253	110	96		22		
302	100	88		37		Liquor is full of
615	72	63		56		Manganese —
245	143	127				
254	128	113		20		
305	117	103		43		
317	86	73		63		No good —
325	64	56				

[D] 200 atmos 1:20

254 Empty 2.6
field 3.8 52/1000

Same as 253 but in frame + Cupes
Co potts.
Most well water graf 4 pts

1214	130	114		
	60	75		
	Sun out down			
315	127	111		
330	115	102	10	
340	100	88	28	
341	85			off

Stalle Manganate
u Perox stiff –

D

1.20

255

Empty 2.6
full 3.8 56/1000

Same as 253.
But Coke 1st pressed 100 atmos
put in Cups & frame & pressed
again only to 150 atmos. –
6 gms NaO
4 gms

341	118	104			
350	103	92		16	Manganate Mg/O₂ –
4 –	97	85		33	
404	55				off –

$\boxed{0}$ 1 1/16 –

256 Empty 2.16 1.2
full 3.8 52/1000

Nitrate, Hypo – 6
grad 4
moistened H_2O

plate prepared 100 at
grid " 100 "

5.17	120	105		
6.10	111	98		3
6.32	99	87		24
6.40	79	72		36

Thermometer right down

~~955~~	~~146~~	~~132~~	~~147~~	
1				
12.19	142	124		
12.27	128	113	40	2nd pos
1.24	85	57	47	
2.06	143	127		
2.12	133	117	13	2nd pos
2.14	128	113	20	
2.21	123	108	32	
2.25	111	100	40	
2.30	97	84	49	
2.31	80	76		off
955	141	124		2nd pos
1	123	108	11	
910	122	99	31	
923	109	96	55	
930	108	94	67	
940	72	62	82	

should go 96 next

Quite Considerably but not bitter yet

pretty good

1/32 gal

257 | Empty 1.3
filled 2.195 — 55/1000

Dehydrated green NiOx. to black but
transparent brown by micro + lamp blow — 600 deg
6 pts

Trap 4 pts

Moisture) KOH 20% — Broken —
Cent press + dry — 100 atmos (110 Crude)
Considerable Comes out in cell,

146	143	126		2nd deg
151	123	108	11	
152	90	78		78
353	138	122		2nd deg
354	113	100	29	
355	80	70		78 —
601	350	90		14% deg
605	208			
609	118	102	112	12nd deg
610	113	100		31
3	112	99		40
608	82	72		48
729	143	126		
732	111	98		25
1005	108	94.3		49
1015	60	77		
1020				

Ng

NO 100 — nickel with 23/19 179 Fe
been over a month no show case changes —

508	122	110	118		
510	113	101	6		
516	110	96			
525	104	92		31	
527	102	91		34	
527	279	72			4 kilo peg 2nd 3/from
528	370	66		40	
533	372	90		82	
540	391	86		110	
545	320	83	118	137	
550	308	76		163	106 V max 2nd peg ~120 ma
553	296	76		189	This is fine —
6—	289	74		213	

94V. 110 ma 2nd peg

1 1/16 —

256	Empty shell	21.6	41.	58/1000	1.4 Faster 17

Dehydrated Cerium Mo Ox — 600 deg Tab
blocks.
Moist H_2O — 6.0% 4 prep

130	140	134		
133	68	58		
238	130	113		
246	32	46	15	

[illegible] 1 11/16

259 Empty filled 2.6 4 1.4 58/1000 Factor 112

Old Bug lot powdered dehydrated 350 Fahr
6 pts Graft 4 pts
Moistened Water 100 atmos (both)

5	135	121		
505	124	112	10	2nd pag
509	104		18	
	weight [illegible]			
620	135	121		"
622	120	106	10	
630	114	102	20	
635	111	98	29	
636	weight run			— water considerable came out
		5	25	
232	113	101		
304	106	95	25	
316	102	92	49	2nd pag
320	101	90.5	56	
325	92	82	62	— quick run wing down
326	54	46	7	
330	45	42	4	
335	42	41	8	
343	40	38	13	
348	38	33	18	
355	34	32	21	
400	33	30	24	2nd pag
405	30	26	26	
410	22	20	28	
415	10	10	29	
420	8	6	30	
425	8	14		
430	6	8	31	off — open 5 minutes
	wing down			
815	138	130	[illegible]	2-31 new — 2nd pag —
825	119	117	25	
830	130	115	35	
840	123	110	54	
854	60		74	

[1] 13/6

260 Empty 2.6
full 5.05 61/1000

Norway 9mm Scale
Melting heat 8
graf 2

2.45

Monitored KOH. Bath pressed 100, at

753	133	118			
1013	127	111		47	
1025	123	109		68	
1030	125	108		75	
1040	123	102		98	
1044	107	93		107	
1050	101	91		116	
11—	101	89		133	
1105	100	89		142	
1110	100	89		150	
1115	99	85		158	
1120	99	83.3		167	
1123	98	82.3		175	
1125	115	102	new m		
1134	102	98		191	
1146	90	80		210	
1152	85	75		219	
12:00	80	68		230	off

Here is fine for the 1st Run

13/16

261

Empty 2.6

full 4.05 58/1000

1.45

116 grams

Big lot powdered + dehydrated at 500° Fah in rotating cylinder 6 pts graphite 4 pts

Moistened with water

639	124	110			
645	113	100		12	
650	clamps				
	3.55	4			
158	128	116			
210	124	116	25	25	
220	120	107.5		45	
225	114	102		55	
230	84				clock stopped

[1] 13/16

262 Empty filled 2.6 / 4 58/1000

Electrolytic Perox Ni from Sulp Ni + KOH
all powder in — 6.0 X 4 graf —
Mounted H_2O 100 atmos 60th

231	114	104			
245	104	94		25	
251	97	88		35	
255	46				

Note

Weight new 28 holegrid
42.9 grammes
Weight of 48 Cups for 1 grid
Weight 25 grammes
Total 67.9
1 Cell 32 grids 2176 gms
4.53 lbs

0 19/16

263 Empty 2.6
full 3.95 57/1000

Green Nitrogen made in bag cloth filter 6 pts
grams
moisture washed — 4
108 pt

8 drops water, 80 mg per drop -

334	135	121				
4	120	105			12	
108	44				29	
555	136	122				
600	113	100			10	
610	110	98			29	
615	110	96			32	
620	106	94			47	
625	100					
510	143	129	142			
527	124	113			37	
538	114	103	110		59	
540	103	94			63	
545	102	93			71	
550	97	87			80	
552	77	70			84	
554	68	60				.066
247	138	125				
254	129	116				
257	122	109				
326	118	107				
306	104	94				
316	104	94				
317	101	90				
327	100	90				
332	94	85			81	
334	94	85				

101½/1000

I find that stuff has slipped away from the grid body
Can press it in
10 or 15/1000

203	143	125	143		
208	125	114		11	
213	120	107		20	
218	110	102			
223	103	94			
228	101	92			
233	100	90			
238	92	80		64	31%
243	50	42			

Stuff absorbed in grid Lake 63 –

264 9(n) Empty 3.4 full 4.9 58/1000

Green Nitrate made in big cloth filter 6 4 (120 hours)

Graf

Moistened with Conc KOH, about 8 drops. 84 milligms is out of one drop

338	142	126	140		
340	134	120			
343	134	119		15	
353	62	56		26	
523	138	123			
530	112	102			
off					
533	127	120			
540	126	114		41	
546	123	118		53	
550	120	107		61	
552	100	85			
553	89	66		66	
554	65	57			
855	123	112			
910	110	99		29	
920	109	96		47	
925	104	96		56	
927	127	114		54	
930	124	114		65	
935	109	97		74	
940	69	57		84	
945	66	53			
952	56	50		7	
1018		4		102	

Notice it apparently absorbs at first two or 3 times more than they usually give out + 3 precipitates this is blue Tl_2O + N_2O_3 + then green + TlO_2 the latter being the active material

new Fe

78/1000

new Fe — N_2O_3 31 (hundredths remained) by 9 — 11.4 —

with Clamp

537	132	120	don't think this fully charged
547	110	100	
547	110	98	
552	106	97	
557	105	96	
602	104	95	5
612	101	93	
612	100	92	
617	100	90	
622	100	87	
627	90	82	

735	143	127		
750	127	112		
813	104	92	77	
835	44			

10

265 ~~[illegible]~~ taken out
~~stuff put a little dried~~
~~then recovered with water~~
~~put 100 atmos + put back~~
~~in mud 100 atmos~~
then if it works again the factor 120.

Compl 2155
bull 405 - 50/1000
mount Cont'd KOH, both pressure 100

Big lot dried - then put in KOH 20 p
several times to soak off yellow
stuff then washed free of KOH
then soaked happo 3 days
in tumbler + most decanted off
put in flotter + Compl tumbler
fills bottles poured thru
Washed dried — it is of course full
of chl soda + KOH, dried.
dull not dead black
polishes to clean Mortar — 604

1120	134	120			1220	60	56	99
1132	116	102			1220	60	54	
1030	118	98			1230	55	51	
1010	105	94			1230	50	47	
1041	101	90			1240	50	47	
1041	102	90			1240	48	45	
1041	108	96			1240	45	38	
1055	125	112			1250	24	22	
1110	120	110						
1140	70	69						
1140	64	60						

charged now

266 Empty 3.12
filled 4.9 56/1000 1.7

Made up to cloth filter 6
graf 4

Monitored KOH Concl.-

Plate pressed 50 at
c(rid) " 500 -

125.50	130	118		
125	126	114		
125	125	112		
110	122	110		
120	118	106		
127	110	99	74	
131	56	52	85	066

4.15
2.65
1.50

2.65 | Empty
filled | 4.15 60/1000

Marlenburg filter cloth, 6
graf 4

Mount Cinch Rott
1st pressure 50 almost
2nd " " 50 almost

10.30	12.45	17.0	10
10.35	112	113	
10.40	110	120	
10.45	110	96	
10.50	106	92	
10.55	104	90	
11	104	83	
11.05	102	91	
11.10	100	88	
11.15	97	85	
11.20	89	76	87

266 Empty 2.155
full 3.95

Mecklenburg cloth filter 6
graf 4

112 feet

Mont Cenis KOH.

1st pressure 50 atmos
2nd " 25 atmos

6	131	123	
606	121	110	
610	114	104	20
615	110	99	30
621	104	94	40
624	80	72	43
8	143	130	
810	123	113	
820	120	105	42
830	95	86	66
838	85	50	

269 = Empty 2.155
fuel 4.10 57/1000

This is the stuff taken out of tubes 263 & 264 - put in new grids.
Both pressures 100 atmos.
I dried it just a little after leaving grids before opened in water - 1557 124 factor

1118	300	79			4th pay
1120	250	76		9	
1123	260	69		32	
1130	231	62		52	
1130	90	63		8	2nd pay
1135	93	84.2		60	
1140	93	82.5		68	
1145	90	81		75	
1150	87	75		83	
1153	82	74		90	
12	75	66		97	
1202	70	74		100	
1205	67	66		106	
1210	69	56.5		111	
1215	60	54		117	
1220	57	52		125	goes to 90 in 5 sec on open
1225	53	50		128	
1230	50	47		132	
1235	47	42		136	off
927	143	127			2nd pay
946	126	109		20	
955	118	107		39	
1010	101	90		87	
1025	50	40		108	

Good!

Had 9 (and) 2nd pay probably U actually [illegible] the latter

new Fe [illegible] the Hi that is gone

842	137	122		
853	182	180		27
913	100	90		62
820	93	83		70
921	125	113		96
833	122	112		70
933	68	60		65

new Fe

58/1000

Have put it Pedeg

270 Empty 2.55
filled 4.30 58/1000

Stuff made in bag cloth filler
bag dried — then put in 20% KOH
& nearly boiled a couple times to
get the yellow substance out which
colored KOH, kept removing liquid
till there was none. Washed with
2 or 3 beakers full (small) of
Water, filtered & dried, put
Concrete Containing Some KOH,
it dries OK —
Freddy used Conc KOH & boiling lake
got too much in & it squashed
& busted 2 grids filtered he
got it in — guess it's rather unusual
but this may be good thing
6 pts grafted 4 pl
both pressured 100 kilos —

837	148	130		
816	120	110		
832	124	114		
820	120	110		
1045	120	108		
1044	120	105		
1044	98	90	92	

271 Empty 2.55
full 4.25 59/1000

Dup of 270, but not so wet
unequilibr wet, 100 atmos 6 days

136 water

11	146	130			2nd pay
1108	127	114			
1108	321	88		18	4th pay
1110	310	80		24	
1116	110	30		58	
359	133	121			
9	109	99		42	
916	106	96.5		71	
922	103	95		81	
927	102	93		88	
932	97	88		94	
~~935~~	~~96~~				
935	70	66		100	off

272 Empty 215
full 405 53/100

Duplicate of 270. cliff on big
Cloth filter / But
Medical only 4 pts
graft 6 "

Monolayer Conc Kott.

Pressed 1st & 2nd 100 almost

137	132	118					
145	113	102	16				
151	109	94	27				
153	109	86	34				
156	50	53					
					413	134	122
837	124	110		2ml	430	115	104
845	108	96	15		430	110	100
855	102	91	33	mg	430	102	99
865	100	87	50		430	108	97
872	97	84	61		440	103	94
878	90	90		14 mg	440	88	
900	50	92	63				
920	49	90.5	68	68			
925	50	96					

Burned connection with not enough liquid

Pat. 13

(5)

941	134	120	
953	133	88	23
1010	93	82	51
1020			gone when I looked

273 Empty 2.55
filled 4.70 57/1000

124 loads

6 pts Ni
4 gray
Moistened Conc KOH. both greens 100

Stuff made either from Sulfate or Nitrate
precip by KOH, then in Hypo acting
for 3 or 4 days renewing water
afterward washed well so no KOH
+ very little ClK in it – Dried
then retreated Cold 20% KOH
Dried then retreated Hot 20%
KOH + only washed in smalls
broken twice leaving large amt
KOH in it & thus formation added
action a bit in boiling KOH ∴

157	174	172			
203	110	104	10		
205	109	96			
315	89	96	34		
330	86	46			

Don't notice any swelling

445	120	110
450	120	102
455	105	97
5	102	93
5 at	100	90
new work 510	92	87
512	90	85
517	82	82
522	64	72
527	60	76
532	50	48

(5V)

25

4.10
2.55
1.55
60/124
75.79
4.50
1.50
5

87.21
1.35
5.15
19.22
5
60
1
3.38
49
7
103
5.75

119
6
87.2

107
5.75

102.8
60) 5.58
4.58
3

274 Empty 2.155
full 4.11 54/1000

Sol in pp'd KOH Ice water –
washed quite free 6
graf 4 –

Moistened Conc KOH Gottfpressure 100 At
(124 podes)

1 =	128	115		
105	50			off
445	143	128		
450	132	118	11	
507	118	105	46	
510	110	96	1	
520	101	93		
525	102	84	79	
530	102	86	87	
535	86	80	915	
540	103	84	201	

Swelled to 104/1000

809	146	132	140	
820	130	117		23
842	110	98		68
853	103	93	102	98
905	90	82		118
927	82	84		151
952	80	93		
952	70	61		181
1	53	50		196
125	47	42		217
145	40	37		234

new Fe

840 open — 1550

240 was washed with water
this was
Mercerized with
Caustic Soda
hence 40 mg
Consumption

275 ~~full~~ Empty 4.8
full 9.02 75/1000

3.22

Moderately cloth filter 6
Graphite 4

Factor 300

Most Conc KOH.
Both pressure 100 at —

106	130	117	126		
122	110	98		32	
130	107	125		46	
131	132	119			new Fe
140	127	113		66	
200	106	96		104	
210	104	93		128	
220	101	93		139	
225	100	89		147	
235	99	89		164	
240	93	84		172	
245	91	82		179	
250	88	79		187	
255	72	66		195	new Fe
300	70	63		200	
305	63	58		204	
325	61	57		210	
345	60	55		215	

Overflowed some

Mr Philipp to 300
9.11.22

530	138	131			9.50	80	72	174
530	136	120	+		9.56	70	62	180
535	130	116			1001	65	60	184
545	124	110			1006	61	58	191
550	106	85	+	74	1011	60	57	196
9	102	83		83	1016	58	53	200 +
900	101	82		91	1021	55	53	204
910	100	91		99	1026	50	49	209
915	130	118		108	1031	50	46	213
920	121	112		118	1036	45	41	217
925	121	111		129	1046		off	
930	120	109		139				
935	119	110		149				
940	119	109		154				
945	118	108		167				

8.40
4.85
3.5

2/6 Empty 4.85
pulley 8.40

Norway Iron & Scale 8
heated & hammered
ground very fine in Water
graphite 2
Moorland Crucible
100 atmos Gotti pressure

910	142	124		Dropped
918	133	118	17	
933	123	109½	91	
1010	110	97	194	
1018	109	96	158	
1031	104	94	162	
1105	103	91	222	
1120	102	89	247	
1130	100	88	264	
1131	108	96		recovered
1148	104	92	280	
1153	98	86	306	
1204	91	80	320	
1215	81	72	336	
1223	70	60	338	
~~1232~~	~~69~~	~~60~~	~~362~~	off
1242	52			

752	136	123	136	
820			9	
220	137	122		
230	113	100		20
251	119	96		59
308	68			

[B] small grid 1/13/16

2/7

Empty 2,55

full 4,130 60/1000.

1.75" but with [illegible] probably 1.5"

Sulph Hi pp by KOH in Ice Water
very pres of impurities 6
graf 4

Then made very wet with Conc KOH
so graphite scarcely showed — so wet
it balled up under pestle
dried in dish over steam plate
at 100 atmos plate very tough
only swelled little when place
put in KOH 20%

Bath pressure 100 atmos
(fluctuated 120)

419	134	118	
434	116	98	10
434	92	37	38
602	147	131	
607	135	121	11
612	132	117	18
615	126	113	29
620	69		

off

5.90
2.55
1.35

276 Empty 2.55
full 4.4 54/1000

Cl Ni in Molten KOH,
Vacuum pump quickly
bottles
100 at both pressures

Mostly Conc KOH,

506 520	132	123 gone		

Ng

279 Empty 2.5
full 4.25 .51/1000

Nitrate Nickel (powdered)
1 projected on
Boiling Molten KOH,
Brown & lost considerable
Some way probably dissolved
using 1 gr of Nit Ni only got
1/2 of Sulphate go from Chloride &
Sulphate same wt in Carmel
lot of stuff came out having a
Compound was formed =
6 pts
Mono Cinc KOH 4 grs
100 atmos both

250 Empty 2.55
full 4 15 50/1000

Sulphate K (powdered) precipitated w/t.
Boiling Matter KOH
Borax probably anhydrous
6 pts. grad 4

Most Conc KOH.
100 c.c. two 60th press

Put Chl K in Sol.

goes right down
to 60 + Times very fairly
well

Can't be oxidized to MnO2 ng

~~2.81~~ Empty 2.65
full 4.125 51/100

Chl Wi Conc Sol poured in
KOH, 350 Fahr –
– Brownish when dry
but transparent under Microscope
Lightish in Water, washes
free, pp. sinks down quick
6 pts
Graf 4

Moistened Conc KOH, not Colloid
100 atmos

1.07	131	114			
	my. ad down				
.537	110	96			
	gues ad down				

Ng

287 ~~287~~ 287.

Empty 2.5
full 4.2~~5~~ 56/1000

Chloride Nickel pp. by KOH, dilute
well w/ ammonia —
6 pts
graph 4
100 atoms basis — Mount Conc KOH

120	141	123		
545	123	110		
550	105	96		
556	102	90		
6 —	100	84	27	
605	99	86	35	
610	95	83	43	
615	90	85	51	
622	83	75	61	
630	73	66	71	
637	56			

136 factor

283 Empty 2.5
full 4.2 50/1000

Nitrate Nickel poured in KOH
350 Fahr boiling pt of sol 370)
6 pts graf 4

Most Cu(OH)2 swells little
dont ox well — not colloid —
ox with differently color
Very light blue verging on white.
100 atmos Cu(OH)2

103	127	111		
106	78			116
540	112	99		
	wrnt	gld down		

284 Empty 2.6

filled 4.2 55/1000

Nickel Nitrate prep by KOH, washed well — 6 graf 4

Moistened KOH — Conc'd

100 atmosphere —

128 factor

201	137	120			2nd prep
206	127	112		11	
210	116	100		19	
2 102	60	54			
455	124	111			
458	127	96		29	
455	146	94		38	
5	103	93		46	
505	102	72		154	
510	98	61		63	
517	100	87		71	
516	50				

295

Empty 2.5
full 4.3 57/1000

Sulm pp KOH to a mush put mush in filter + filtered then added 1/2 pint water – to full KOH + SulpK – dried to powder
6 pts grafts 4 pts

Moistened KOH Conc 6 oz to 100 cc Amm

144 factor
but this factor
wrong

4.42	145	122		
4.45	63			
4.25	139	121		
4.30	109	97	10	
4.35	98			
4.18	121	108		
4.26	105	93	15	
4.30	104	92	27	
4.33	90		28	
	50	60		
4.47	140	124		
4.55	127	112	17	
4.21	114	97	49	
4.19	104	90	93	
4.20	87	72	93	
4.27	99	78		
4.22	48	42	107	
5.22	141	125		
5.45	120	110	43	
5.50				
5.29	120	108		
5.33	110	97	87	

If swell somewhat any

Intermediate

92/1000

off

Incorrect

931	57	50	90	50
945	42	36		92
950	26	18		
930	123	110		
935	112	102		9
950	108	93		37
90	101	90		54
1018	62	56		69
1013	53	47		73

9 debut sechnigs it long enough — in advance have done better

71/1000

D 1.13/16

286 Empty 2.5 —
full 4 — 56/1000

Ni Nitrate pp by ammon
excess Ni nit — 6 — graf 4 —

Conc Kott 7 drops —

640	80	72		
642	69	62		
647	60	53		
648	137	122	new Fe	
652	127	113	17	
657	62			
	140	125		
710	127	112	22	
714	126	112	32	
720	122	107	42	
730	112	100	62	
737	100	90	74	
740	100	89	79	104 opened ht
743	93	83	87	
747	53	50	90	
750	52	46	92	
755	45	42	97	
8	43	39	109	
1705	42	36	109	
710	38	34	107	
715	32	28	101	
720	22	20		
737	147	130	144	
740	127	110		13
743	112	98		22
747	102	90		46
750	70	62		67
755	70	62		73

new Fe

Carbonic acid (ins avoided) at all — this is fit

71/1000 only quotted 15

1109	47	41			76
1110	63	56			78
1115	58	43			82
1120	46	41			86.
1127	35	32			91

new 72

85 in 4 seconds of quick

83/1000 Bismuth. Amount Hcl is the same

B 13/16

257 Empty 2.5
filled 4 60/1000

6 pts. 4 prof

Sul Nickel treated hot with Hydrate of Magnesia forming Sul Mg + Ni Hydrate

Bottle very quick — No swell in KOH.

Think this is the way to make the Hydrate

moreover (Conc KOH) 6 drops — turns green then 3 drops — no more, white wheelbug —

Thus is not definitely a very complicated problem

130 parts of Ferrous

6.55	135	120		2nd
7.01	124	110	11	only been on 15 minutes since made —
	50			No swell at all — little sign
20	133	123		2nd prep
7.27	120	110		
7.31	113	104	22	
7.35	103	94		
7.37	137	119		new Fe —
7.45	121	110	30	Notice slight swell —
7.51	127	121	62	
7.55	93	84	69	+ gas to 120 on quick quick
8.00	83	58	70	100 " "
06	57	52	81	
10	54	50	82	
7.22	130	113		
7.30	103	94.3	35	
7.50	100	94	52	
8.1	72	64	66	
8.01	90	58	66	new Fe, it cost the Fe
8.22	48	43	91	
8.31	34	34	94	
8.37	28	27		
10.17	138	124		2nd prep
10.23	123	109	17	
10.33	113	103	37	
10.40	103	92	46	
10.45	83	75	54	not matted
10.50	69	61	60	

86/1000

Sickly 78

Sickly finally but little more than 7.06 of time

4/5
2/30
1'

B 10/6 1.6

288 Empty .215
full .41 62/100

Hydroxide Ni mostly blue in
ammonia-filtered
NiCl Solution Evap at crystalizes
in exceedingly small Crystal, formline
mice in Wedges dist at 5.5, 5 inches
Conc HCl, 6 pts grey 4 pts
Both pressures 100 atmos
3.4 and take the Current at first
take precip from NiCl NiCl by NiCl
or the Magnesium precip

103	121	107			
117					
	143	127	139	22	
	129	114			
	112	101		59	
117	42	38		77	
	131	118			
	109	97		46	
	94	84		63	
	53	48		53	
	78	69		52	
	48	44		73	

73/100

289 Empty 4.8
full 7.6 66/1000

2nd Crop $Ni(NO_3)_2$ dec in HNO_3 + Evaporated, 6 pts. grad 4.

Monitored KOH Conc 4 drops 100 at each

(pots 224)

1030	136	121		
1025	132	118		
1030	130	116		
1035	127	114		
1040	124	111	62	
1045	120	108	72	
1050	115	102	87	
1055	86	75	90	
1100	55	51	96	
1105	54	45		
1110	50	46	105	
1115	49	45	109	
1135	128	110	120	
30%	107	96		52
333	50	45		93

mg

290 Empty 4.9
full 8.7 83/1000

$MnO_2 \cdot H_2$ from Nitrate by KOH
dis. in HNO_3 + Evaporated
1st Crop crystals — 6 pts. 4 grs

Moistened 10 drops Conc KOH, pts 300
100 atmos - bott

5.46	140	125		
555	117	104		19
605	113	102		38
610	112	100		48
615	122	110		
625	111	100		58
625	110	99		63 — 48 to Supper
750	121	107		
8:00	107	95		
8:05	55	49		91
12.10	149	133		
12.18	135	122		
12.20	135	120		
12.28	127	115		34
12.30	112	100		
12.35	110	100		44
12.40	109	99		53
12.50	107	97		72
12.50	105	94		79
12.55	60	54		

Phenomenon
Last night took it off
+ dried platter 11 hrs
represented grid 125 —
atmos on charge great
deal stuff came out +
grid swelled frightfully —
Why, ????

1245	60	53		205	
1250	57	51		210	
1255	53	47		213	
~~1145~~ 1145	~~180~~ 180	~~115~~ 115	~~124~~ 124	~~224~~ 224	~~[illegible]~~ 96/1000
		94	106		
749	143	128			
755	124	110			
800	115	101			
805	102	85			
810	105	92			
815	100	87			
820	96	85			
825	90	78			
830	83	73			
835	75	66			
840	68	60		87	new Fe 260
845	135	123			
850	127	114			
855	126	113			
900	120	107	129	126	
905	121	109			
910	115	104			
915	90	81		155	
920	65	61		161	
925	62	57		166	
930					

Avoided 19/1000 Thus above

94½/1000

291 — Empty 4.9
full 8.4 79/1000

260 parts Non-colloidal

6 pts 4 graphite —
Nitrate Nickel precip by Magnesia hydroxide at boiling heat, Nitrate Ni in excess washed well, dries to light lint of green its a powder + absolutely Non Colloid — 22 drops Conc Koff, made very wet + pestle rocked till bulk small + graphite covered, then dried a little + pressed —

815	147	132	140		
815	130	124			
823	135	121			
8	132	117			
8 3	130	117		45	
835	130	116		49	
840	127	115			
845	125	111			
850	60	65		75	
1042	137	122			
1050	120	105		117	
1055	117	103		127	
11 —	114	101	108	367	
1105	114	100		46	
1110	107	94		82	
1235	103	92	100	100	
1240	102	91		108	
1245	101	90	98	117	
11 35	98	87		132	
12 —	97	85	94	142	
1205	93	84		149	
1217	88	78	88	168	new Fe
1230	84	76	84	192	
235	64	58		192	
240	62	56		200	

Notice the avoided (old Fe 260 to avoid) at 0 + 1 drop + 10 drops with the most diff in 10 drops 29 — has avoided 10 drops only by 1 — 10 drops very most for polyl!

910	102	91			45
915	100	90			23
920	99	88			63
925	97	87			70
930	95	86			78
935	93	84			86
10	87	73			122
1001	130	116		new Fe	
1005	121	104			133
1010	116	104			143
1014	105	94	124		152
1021	82	82			162
1027	73	66			171
1030	64	62	120 7ml		174
1035	64	57			180
1040	60	58	100 5ml		185
1015	273	119		3rd plug	Fe 74
1020	244	107			
1025	197	86			
1030	191	84			
1035	155	81			
1040	150	79			
1045	170	75			
1050	156	69			
1055	140	62			
11	124	55			
1105	105	46			
1110	88	41			
1115	86	38			
1120	80	35			
1130	72	32			192

113/1000

Scale 39/1000

291 Empty filled 4:1 8-1 79/1000

Same as 291. Except wet with Water instead KOH, but worked in Worker the same —

245 total Fe

854	137	120	—
854	130	118	
902	130	113	4
910	115	102	
915	114	101	
920	113	101	
925	112	100	44
930	110	98	
935	109	97	
940	108	97	
945	106	96	81
950	105	94	
955	95	84	98
1000			
845	114	112	
850	113	103	
	111	100	10
	104	94	28
905	103	93	36

Exports for Patent Exp.

Zinc – KOH – Ni_2O_3 by Hypochlorite gives deflection then goes right down

Zinc KOH, Ni_2O_3 from igniting Nitrate at 600 Fahr gives 120 then goes straight down to 32 which is about def between Zinc + D_2O + H_2O –

7.55
4.75
2.80
7.4

293 Empty 4.75 Big Reg 2.50

CHANGE full 7.55 79/1000 224 Fahr

Same as 291 Except Water used & graphite + H_2O mixed on glass plate & rolled with boxed air roller till all showed graphite & each flake Coated with Oxide – When pressed the plate to 100 atmos then put it in pocket & thoroughly dried it then put pocket in Nickel & pressed it to 100 atmos – When I put it in Cell it gassed but soon stopped, when Solution run in –

Fahr 224

805	134	120		
820	104	94	30	
830	103	94	48	
840	77	60	63.	
841	17			
103.	140	124		
111	114	102	16	
125	111	102	48	
130	110	97	52	
141	104	94	72	
152	102	90	96	
205	97	83	112	
207	119	106	118	
215	97	80	125	
229	91	72	136	

Dwelled some.

104 on pencil Thermo shows low internal like 291

minute 128 open –

66 11/8 Amp 31/100

830	152	140	142		
835	130	116	126	35	
850	108	96	104	65	
900	99	87		82	
910	61	55			

Start of Contact
by putting finger on
middle finger
pumping Water up
70 points
Movement to stop

294 Empty 4.75
full 7.5 57/1000

CHANGE

190 lbs
20 Ft

MO hydrate by Magnesia from Ki Nitrate
6 pts grap 4 pts
powder) metallic Molded made by
Electrolysis in ammonia
Solution, 1.5 pts

Moslemer Cine KOH + Rolled on
Glass —

930	135	121	136		
935	120	109			
940	112	100			
945	110	99		29	
950	110	96		38	
955	109	97			
1000	108	96			
1005	107	95		65	
1010	106	94		74	
1015	105	93			
1020	104	92		91	
1025	102	90		100	
1030	95	85	110	104	
1035	63	55			
1036	85	65		115	Water
1040	70	62		120	
1050	67	60		126	
1050	65	58			
1055	63	55		139	
1100	57	52		142	
1105	49	42	60	146	
1110	42	37		150	

96/1100

5

pointers to be
any another
Metric Tension drop
of Water

This is Great Heat
run + water
drop part

5
1

Dunell. [illegible] 13/16

295 Empty 2.5
full 3.7

160 [illegible]

MO hydrate Magnesia process
without graft internally but coated with it
on outside of plate & then put in pockets
100 at both
Moistened Water —

347	123	110		
350	110	98	108	
4	33			
1152	120	108		
1155	116	104		
1200	65	60		
1205	50			

Ng

Ng

This iron glass been cranny
seems to go bad – test it

296 Empty 417
CHANGE full 8165 – 72/1000

Norway Iron scale grand fuse –
6 parts graphite (4)

Allow not Come Kott, Rolled on glass

2.37 7 scale

1124	127	112			
1130	121	108			1st peg
1135	120	107			
1140	119	106		32	
1145	118	105			
1150	117	104			
1151	117	104			
1155	116	104			
1200	65	60			
1205	114	101			
1210	110	99			
1215	107	98			
1220	97	86			
1225	95	85		113	
1230	95	84			
1235	93	83			
1240	93	82			
1245	93	82		144	
1250	92	81			
1255	90	81			
1300	109	94	112		new pl
1305	93	83		175	
110	85	75			
115	90	80			
1320	90	80			
125	85	75		217	
130	85	75			
135	100	88		224	new ni
140	75	66		231	

changed ni back & cut again

quit for night

2,05

297 Empty 2.7
full 4.75 – 55/1000

Nickel reduced by Hydrogen
+heat, then boiled in Conc KCy
6 / graphite 4

Conc KOH insoluble 100 atmos

115 / 116	109	109		

1 constant

2.96 Empty 4.165

full 7.16 61/100.

N.O.4 by Minguna process 6
graphite big flake nickel plated 4

Moulded 1604, Rolled, The flakes are too large must be our regular size
nickel plated
100 atmos.

7.17	131	116	123		
7.26	114	103			
9.30 9.00	110	97			
					Graphite at first heard it not on table, 3 hours out of liquid —
7.58	147	129			
8.05	136	116			
8.10	95	84			
8.15	70	61			
8.30	55	49			
8.35	48	43			
8.30	40	37			
8.35	36	33			
8.40	33	30			
8.45	30	23			

299 Empty full 4.8.75

62/100

303 factor

Mix Magnesia process 7 pts
Nickel powder reduced by
Hydrogen from anhydrous NiO —

Mort KOH, 15 Drops ~~[illegible]~~ only
ground — powder totally inadequate
bulk too small to give any
result + Unmix —
Crucible came out grid at first —

1005	122	108			off —
1023	50				
1143	132	118			
1250	124	108			
1255	107				then dropped to 60 at once — left contact grove

300 Empty - 4.65
filled - 8.15 $\frac{81}{1000}$

Ni made in big cloth filter 6 gms.
Plumbago 4 "
Moistened KOH Conc.
100 atm.
Pocket thus [illustration]

Not tested

930	143	127	136	
930	135	119		
935	130	115		
940	121	107		
945	113	100		
950	111	98		
955	110	97		
10 —	107	94		
1005	105	93		
1010	99	87		
1015	94	85		
1020	85	80		
1025	65	58		
1030	57	51		
1035	49	44		
				117

→ Put in new gasket — 5 mm off.

The pocket pulled apart have made another ⇒

by Raggrid

301

Empty 4.6.
full 7.45 60/100

Ni O made in by filter: 6 / 4 } 2.85
grof.

Moist Conc KOH not rolled 228 factor

not rolled

This is Concave and the plate was 195
Moulded Concave and then put in pockets
of the whale pressed Concave

1140	140	125	134	
1150	125	110		
1155	109	96		
1200	106	94		
1205	88	76		44

It is very stubborn in center though & after Concave 1130 will a ad night [illegible] gravity carry out grid - while hot Come out 1030

302 CHANGE

Empty 4.6

full 7.85 — 76/1000

McO made in big clock fillin 6

grog 4 260 feet

Mount Rott Cinc 100 almos

Case hardened packet 3 seconds

1212	145	125	
1215	139	123	
1220	136	120	18
1225	138	118	29
1230	132	117	
1235	130	116	52
1240	127	114	62
1245	125	111	73
1250	117	104	103
1253	57	52	
821	147	132	
830	134	120	21
845	124	112	53
855	104	97	82
915	107	96	109
930	106	94	118
950	98	83	156
402	143	129	
417	135	114	
437	110	100	
455	107	92	105
513	103	92	133
528	89	76	163
556	78	67	173
604	72	56	200
608	72	66	
610	64	58	207
827	57	52	227
8	44	40	237

Thus tells the tale

Use air on the right

Track wear - notice the

Good locks & throw

The sudden drop

The pocket inside

ELASTIC after

the change of

faith

never

off

113/1000

37/1000

303. Empty 4.8
full 7.6 81/1000

MD — by cloth fuller (soft new stuff in grid)
6 pts Graf 4
Monsted NOH Conc
pressed only on edge of pocket,
224 factor

1830	142	128		28	
3.33	132	117	127	44	off —
3.46	20				
7.07	145	131	140		
7.12	146	124			
7.15	135	122			
7.20	133	120			
7.25	130	118			
7.30	125	116		51	
7.35	127	115		63	
7.40	123	113		79	
7.45	123	111		83	
7.50	119	106		93	
7.55	111	99		102	
8.—	105	96		111	
8.05	132	121		111	new Fe
8.10	113	101		114	
8.10	65	62		127	
8.15	64	58		134	
8.20	61	55		134	
8.25	56	52		140	
8.30	53	47		147	
8.35	47	45		154	
8.40	44	39			
8.45	35	32			
8.50	20	19			

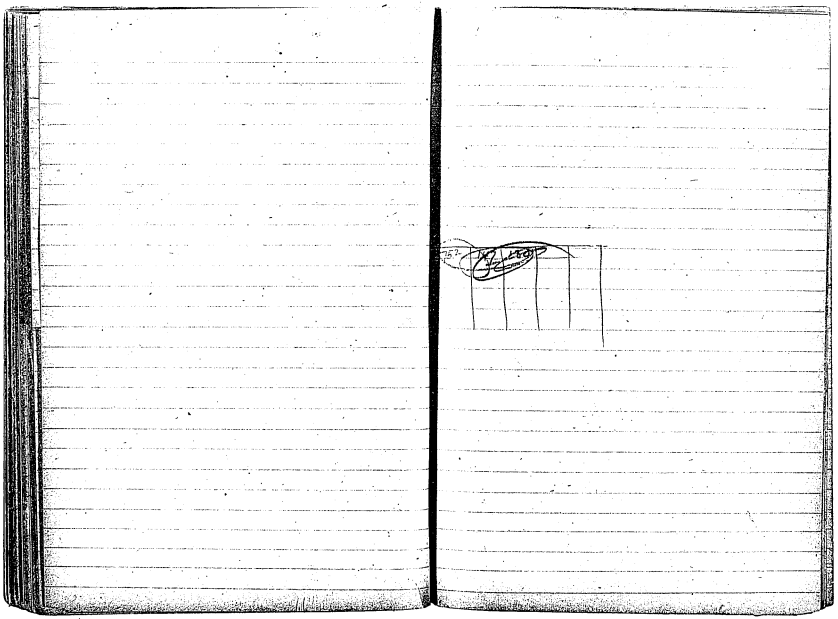
D 13/16

304 Empty 2.5
full 4.3 61/1000

Consult hygienic Magnesia process 6
Group 4

Nesset Cmo Rept,
100 cat

952	147	130		
1000	106	95		
1005	50	44		
952	145	130		
10 =	120	98		
1005	91	82		
1010	20	19		27
1137	260	120		
10 30	122	108		
1 35	98	82		
1046	30			
	Removed Rubber			
5 10	145	128		
5 15	123	108		
5 25			119	



305

1141	135	
1145	124	10
1152	122	
1205	115	40
1215	105	
1220	104	67
1230	101	98
1240	100	95
1250	99	112
100	98	125
110	98	143
115	59	149
120	58	154

MAH

87/1000

305 Empty 4.9

filled 7.9 72/1000

NO from Nitrate by Magnesia process

6 pts – 4 graf –

Moistened Cork OH, Roll(c)

Opening steel, burrs off – flattened around edges only – 100 at.

1045	125	111	
1055	113	102	
1100	110	98	42
1121	108	95	62
1124	102	91	84
1130	99	87	94
1135	89	78	106
1200	134	118	
1205	129	115	133
1210	113	102	148
1220	57	50	166
1230	50	45	173
1240	47	42	185
110	38	34	201
115			

New Form

306

912	143	
915	138	7
920	134	
925	123	29
935	111	
940	110	58
945	110	
955	109	85
1005	105	103
1015	104	
1025	100	137
1035	95	
1040	95	162
1050	50	174
1055	47	
1100	45	182
11.05	44	
11.10	43	189
1115	41	
1125	40	
1135	36	205 Mol.

306 Empty 4.7
full 7.55 — 70/100

MO from Nitrate Magnesia prisms,
6 pts 4 graf —

Rolled-Moistened KOH —

Spring steel. Corrugated across
100 alnos

Burro left on

857	271	120		30 peq
858	242	106	56	
903	106		93	
114	122	110		30 peq
120	117	104		
123	118	106	86	
1.15	109	97		
131	108	95	65	
200	106	94		
210	103	91	94	
220	100	88		
230	78	66		Neu fa
240	65	57	131	
250	60	53		
300	51	45	150	off

610	140	124	
620	130	114	16
632	109	96	40
635	108	96	45
			off
715	130	112	65
735	109	96	
745	79	57	
749	50	44	97
805	44	33	102 Mah
		23	

127	130	114	
134	128	104	19
145	116	101	37
155	112	100	86
200	112	99	
211	110	98	86
220	110	96	116
230	108	95	
240	104	92	133
250	50	43	171
300	45	40	
308	43	39	149
310	60	53	Murfee
315	53	48	155
320	50	45	160
334	46	40	168
337	40	35	173
342	36	31	176 Matt
			off

307 Empty 4.9

full 7.4 67/100

M.O from Metrale Magnesia proc 6 pts
Graphite 4 pts

Rolled - Moistened KOH Conc
100 atmos
Spring at 60. Corrugated across grain
Burrs off

906	137	123	
915	114	106	
925	118	102	34
931	118	99	56
946	108	97	
1012	48	42	
147	148		
154	129		
200	128		30
210	123		
215	120		
220	118		71
230	105		
240	103		108
250	100		
300	50		124
310	47		
320	43		140
330	41		
338	40		151
347	34		
355	23		162 Mah

335	147	130	
345	122	108	
355	117	102	44
405	112	99	
415	110	97	
425	109	96	99
435	108	95	
445	106	94	131
455	109	92	
505	101	90	162
515	50	45	175
520	49	44	
530	47	45	186
540	45	41	
550	42	38	
6,00	40	36	206
401	143	124	
406	124	110	
410	121	106	187
420	117	103	37
433	112	99	52
438	110	97	80
445	108	94	
510	105	93	108
515	104	92	108
520	102	90	
530	99	87	133
535	94	84	
545	87	76	156
555	45	36	167
600	38	33	170
601	60	53	New fe
611	52	48	
617	51	48	
621	50	46	188
630	50	47	196
640	48	42	

It will have been better Volt as a forward Fe Low

306 Empty 5.16
full 8.25" 66/1000

No. from Nitrity Mag process 6—
graphite 4

212/1000

Rolled—Moist Kotline 100 at
Corrugated across 4/1000 sheet
Nickel

	Am	No Volume	
911	135	Mark	
913	134		
915	132		
918	130		
921	129		
925	128		
932	126		
938	125		
944	121		
950	110	82	
957	64		
1000	59	103	
1008	55		
1011	53		
1015	51		
1020	45		
1025	30	119	

1[illegible]0	130		
1130	120		
1150	108	41	
450	96		
500	91	73	
510	101		
520	101	105	
530	70		
540	59	130	
550	45		
600	45	146	
612	40	154	
621	39	160	
627	36	164	Mok

1210	123		
1215	110	9	
1225	98	27	
1235	99	47	
1245	92	59	
1252	92	64	
1259	91	80	
107	91	92	
115	90	104	
127	90	122	
136	90	135	
145	86	148	
158	45	156	
200	42		
208	41	169	
215	40	172	
216	60		
228	52	183	
233	50		
240	45		
246	40	196	off
251	32	199	Mok

309 Empty 5.6
full 8.6 81/1000

NiO from Nitrate, Mag Process, 6
graphite 4

Rolled-Concl OH - 4/1000 Nickel
clamped around edges
not pressed in center

1025	138		
1032	127		
1039	119		
1045	112	36	
1051	112		
1100	112	64	
1110	110	83	
1115	109		
1120	107		
1125	106	100	
1130	105		
1142	101		
1145	100	134	
1155	98		
1205	94	158	
1210	93	169	
		off Mangle	
1225	77		
1230	66		
1235	53	180	
1240	39		
1255	30	196	off —

310 - Heat Co_2O_3

1025	118	104		— Reversed Reducing
1027	50			

311

	Mod Cuna	
9.35	124	
9.45	112	13
9.55	111	
10.05	110	88
10.10	109	
10.20	108	87
10.30	105	
10.40	102	121
10.52	100	140
11.00	95	
11.10	90	172
11.15	86	178
11.25	41	
11.33	40	191 Mod

311

Empty 4.79
full 7.3 73/1000

N_2O from Nitrate Mn + Magnesium by heat
Excess Mn^{++} nitrate washed & dried
then boiled with warm very
dilute nitric acid washed & dried — 6 gts grad 4

Mouston KOH Core — Rolled
Corrugated Cross wire — steel sheet
100 at —

8.50	132	116	Mod	Phenomenon —
8.55	127	110		This grid corrug is
9.05	120	109	31	only one where stiff
9.10	118	103		opposite two holes
9.15	116	102	51	must be texture of stiff
9.20	115	101		changed by action
9.25	113	100	70	of the acid —
9.35	112	98		
9.40	110	98	98	
9.45	110	97		
9.55	110	96	125	
10.05	107	93		
10.05	100	87	155	
10.25	95	40	167	

1207	135	119	Mold
1225	125	116	39
1238	100	86	63
1243	68	60	70
1248	60	53	75
1253	56	50	80
1258	57	46	84
103	48	42	
108	46	41	92
113	45	39	96
120	42	37	

Dulce fructed out"

312 Empty field 4065 7.4 69/1000

~~Same B~~ ~~[illegible] 3.74 but fructed~~
~~[illegible]~~

~~[illegible]~~ NaOH Hydroxide from Nitrate Ni
by Magnesiaperoxide treated
with Hypochlorite Sol —
6 pts. grade 4 — Rolled — moist
Conc 100 ft
Sheet Steel Corrugated Cross
100 atmos —

220 feet

1027	121	106	
1030	113	99	6
1035	102	91	
1040	92	81	23
1050	72	63	
1055	59	96	39
1100	38	32	45
1110	29	23	50
1114	135	118	
1120	130	114	64
1125	129	113	74
1132	127	102	84
1140	124	110	
1155	107	93	130
1200	104	92	146
1209	102	90	
1220	107	88	180
1225	100	82	198
1237	97	80	204
1237	82	48	207

Best yet

313 Empty 4.65
full 9 73/1000

Norway Iron at melting heat
hammered
graf 2

Steel grid corrugt'd Crossing
not rolled — Reg way
100 units

314 Empty full 4.7 9.25 - 76/1000

Norway from melting Kist hammered 8 2
grog

Morat KOH, rolled, steel grid Corrugated
100 calendar

915 Empt full 4.7 875 – 62/1000

Morewing from scale melting (heat treatment)
No graphite

Monsteno RO4H Cro not rolled
steel grid Corrugated, 100 at –

EH. 13/16

316 Empty 2.15 —
full 3.95 —

Wash water from precip Sul Cobalt by Magnesia Hydrate, Contained last Cobalt, precip it by KOH, added Hypochlorite K, + washed
Dried — very black —
100 at, (~~[illegible]~~

Time	Amp	Volts	Mah.
8.27	120	112	
8.30	118	103	
8.35	102	90	15
8.40	90	78	31
8.45	78	68	
8.50	30	25	41 Mah.

317

Empty 4.7

full 8.6

This supply a hundred times the load needed in Kolly

Rig by hot Mt Ki Magnum process

6 – Nickel plating graphite

30 on 50 – 4 pts

Mount Kolly Coils Rolled

Steel grid Corrugated 100 atmos

	Middle	Bottom	
10	142	124	
10.10	118	103	21
30	115	107	
10.40	113	100	60
50	112	98	
11.00	111	97	97
10.10	110	96	
10.20	109	95	134
10.30	108	94	
10.40	104	91	169
10.52	51	45	185
10.55	50	44	
11.00	50	43	
11.05	49	43	196
11.10	49	42	
11.15	49	42	212
11.25	47	40	
11.30	45	39	216 Max.
11.35	68	60	
11.43	63	56	225
11.50	60	53	230
11.55	56	48	
12.00	50	43	238

318 Empty 4.95 87/1000.
filled 8.

Big lot not in magnesium process
6 pts Metallplated grafoil 4 pts
mount Kott Cons pulled
steel grid Corrugated 100 atmos

714	140	
720	125	13
730	25	26 off

319 Empty 4.75
full 8.14 15/1000

Bag lot Not Hi by Magnesia process
5 parts
5 1/2 " graphite

Monsanto RFH Cone Rolled
WD wrinkles steel Cross Corrugated

315	130		
320	100	9	
330	95	25	
340	73	39	
345	52	45	
350	40	48	
361	104		New fe
365	94	55	
402	84	68	
410	77	77	
420	78	91	
434	45	103	
448	118		New fe
505	50	123	
510	50		
515	50	132	
520	50		
530	48	144	
540	38	151	Mach.

Notebook, N-01-04-05

150
38
1500
4500
60) 4500
4500
0

(77

355
77
432

April 5th 1901

No 320 Reg-grids Latest, first ditchy

Millame	V closed	V open		
426	274	115		3rd peg
432	250	107	128	
440	130	55	88	
445	122	51	86	
450	114	48	82	
455	108	47	80	
500	100	42	76	First Run
505	95	39	75	
510	89	37	75	
516	74	31	74	
520	66	27	73	
525	51	21	70	
530	33	13		off

Not rulled

grids not plotted

No. 320. Second Run

Time	Milleap	Volts.	V. Open
7.45	308	129	154
7.50	280	119	137
7.55	268	114	130
8.01	258	109	126
8.05	250	106	122
8.11	168	68	110
8.16	115	48	86
8.20	107	45	75
8.26	100	41	70
8.30	96	39	68
8.35	90	37	64
8.40	85	35	60
8.45	80	33	58
8.50	73	31	55
8.55	70	29	54
9.00	65	27	53
9.05	58	24	52
9.10	52	22	50
9.15	45	19	— off

No 320. Third Run.

Time	M. Amp.	Volts	V. Check
1.56	295	126	149
200	275	119	135
205	260	112	127
211	228	98	108
215	218	94	106
220	203	88	104
224	123	52	100
228	105	45	75
235	94	40	70
240	88	38	65
245	85	36	60
253	79	33	55
300	73	31	54
307	68	29	53
315	62	26	50
320	58	24	45
325	53	22	40
330	48	20	35
335	41	18	

3rd Run

No 320 Fourth Run

Time	M Amp.	D. Ohm	W Ohm
8.13	3.12	130	154
8.17	2.87	119	134
8.22	2.68	114	128
8.30	2.33	109	126
8.35	2.41	103	123
8.42	1.30	58	98
8.48	1.13	48	90
8.55	103	43	82
9.10	85	36	65
9.15	80	34	63
9.20	75	32	60
9.25	70	30	55
9.31	66	28	50
9.40	57	24	48
9.45	53	22	45
9.52	46	19	45
9.58	40	16	

3rd

off

3.10	3.03	138	158
3.17	2.80	115	135
3.26	2.28	98	112
3.31	2.14	96	106
3.52	98	38	70

4th Run

off

9.10	3.00	125	138
9.15	2.85	119	132
9.25	2.69	113	127
9.30	2.58	109	125
9.35	1.95	81	122
9.40	1.40	59	100
9.45	1.26	53	86
9.53	103	43	75
10.00	92	38	63
10.06	86	30	64
10.14	76	32	60
10.24	62	26	55
10.34	49	20	48
10.45	30	12	

5th Run

off

No 320. Sixth Run

Time	Milliamps	Volts	V Open
8.08	300	108	152
8.13	273	117	132
822	256	110	126
827	242	105	122
834	138	59	102
838	117	49	90
845	102	43	75
850	96	41	70

Cut Out

No. 321 Empty 5.1
Full 11.8 net

102/1000

Fe_2O_3 reduced in H at 500° + kept in H for 16 hrs. fine + black 8 parts.
Plumbago 2 parts.
Moistened KOH. 100 atm.
Reg. Grid.

Time	M.amp.	Volts	Open	
9.05	2.80	120	150	
9.10	2.55	110	133	I ↓
9.15	3.41	107	127	43 Mah.
9.20	2.40	103	125	
9.26	2.26	97	123	86 "
9.31	1.12	48	90	96
9.34	2.55	110	138	New Ni 119 "
9.40	2.10	90	132	
9.45	2.06	89	127	
9.50	2.05	88	122	151 "
9.55	2.02	87	120	
10.00	1.98	85	118	185 "
10.05	1.10	46	90	
10.15	99	41	75	
10.15	93	39	70	208 "
10.17	2.75	114	142	New Ni.
10.20	2.50	107	127	
10.30	2.25	95	114	
10.35	2.08	88	108	240 "
10.40	1.98	84	103	
10.46	1.85	78	98	
10.53	93	39	75	292
10.54	2.60	108	134	New Ni.
11.00	2.09	88	109	
11.05	2.00	84	104	
11.11	1.91	81	100	352
11.17	1.78	75	95	
11.22	1.63	70	90	
11.30	1.44	61	85	395
11.37	1.28	54	82	
11.43	75	32		421

Continued Next Page

No. 321 Continued

Time	Amp	Volts	V. Cycs	
1150	240	100	122	New Mi
1200	103	43	55	
1205	96	40	50	
1210	90	38	78	474 Mah.
1216	83	35	73	
1223	79	33	73	484
				off
106	263	110	130	
112	227	96	112	
120	108	45	86	524.
127	80	33		
130	75	32		539
134	220	94	131	New Mi.
142	168	71	95	
148	140	59	80	
154	104	44	70	592
200	85	36	65	
204	79	33		
				70. 615 Matt.
205	180	66	100	New Mi.
213	70	30	75	632 Matt.
219	66	27		
225	61	25		
231	58	24		
239	55	23		654
245	52	22		
251	50	21		665
				New Mi.
253	180	60	102	
259	51	22		
306	48	20		
312	45	19		686
318	45	17		
324	44	15	off	734 Matt.

Taken to make
on Lumbold

No. 322. Empty 5.45 $\frac{107}{1000}$
Full 12.75

Fe Oxide from finely divided iron
by CO_2 at white heat.
Strongly magnetic 8 Parts
Plumbago 2 "
Moist KOH 50%
100 Atm. 107/1000

Time	Mi. Amp.	Volts.	V. Open.

Coached
Cut Out

Brick 4.95

No. 323 Empty 5.35 $\frac{106}{1000}$

Filled 10.3

Magnesia chlorinated with drying chlorine washed on filter upstream

powdering 6 parts

Plumbago 4 "

Moist KOH

Cake 50 atm. Cup 50 atm

Time	Milamps	Volts	V. Open
816	280	119	102
823	210	80	107
827	195	82	102
831	190	80	100
840	184	78	97
847	178	75	94
851	170	75	93
859	200	83	102
905	170	72	92
914	146	62	86
920	131	56	84
926	119	51	82
934	103	44	80
940	96	41	78
946	90	38	
952	83	35	
958	77	33	
1004	72	31	
1016	65	28	
1022	61	26	
1028	60	25	
1034	56	24	
1047	43	18	

1st Run with No. 321 Fe.

3rd Pay

82 Matt.

121 "

177 "

223 "

268 "

~~291~~ Matt.

Calipers 133

10.30
5.35
4.95

323

Time	Mamp	Volts	V.O.	Pem	Matt
401	280	1.51	1.52		
407	240	103	1.26		
413	226	95	1.18	48	
420	210	89	110	85	
425	199	84	104		
435	195	82	101		
441	191	81	100	154	
450	188	79	98		
455	186	78	96	197	
501	182	77	95		
507	179	76	94		
515	173	73	91		
521	169	71	89		
539	150	64	81	322	
547	140	60	76		
555	130	55	72		
603	130	51	66	376	
615	97	40	54		
621	89	37	54		
626	79	33			
627	231	100	126		
630	202	85	113		
637	175	75	95		
718	220	95	125		
729	168	71	96		
735	96	40			
745	93	39			
801	79	33			
810	65	27			
845	35	9			

2nd Run 322 Fe
3rd Pay

412 Hewitt Fe 321

445 Matt

520

571 Matt

No 323

Time	Mamp	Volts	V.O.	Pem	Matt
900	273	1.10	1.39		
920	205	86	1.04		
930	191	79	97		
945	162	67	86		
1000	137	58	78	162	
1015	115	48	65		
1033	105	43			
1043	99	40		241	
1044	262	1.05	138		
1059	232	97	121	302	
1114	226	94	120		
1130	216	90	118	419	
1145	126	52	85		
1200	115	48	75	491	
1215	100	41			
1245	105	41			
1200	50	19		538	
830	290	120	141		
847	253	1.05	138		
900	253	104	136		
915	246	102	124	194	
930	239	101	122		
945	233	98	119		
1000	229	96	118		
1015	220	99	116	425	
1030	156	69	95	475	
1045	121	51			
1103	106	44		549	
1118	67	27			
800	275	1.14	150		
815	237	101	126		
830	229	97	122		
845	227	95	120	181	
900	224	95	118		
915	220	93	116		
930	216	91	114	245	
945	214	90	113	401	
1000	207	87	108	454	
1015	191	80	102	504	
1030	182	76	98	548	
1045	135	58			
1100	93	38			
1115	84	36		637	

3rd Run 321 Fe
No 3
3rd Pay

Hewitt Fe No 329

gg

4th Run
Hewitt Fe 335
3rd Pay

5th Run 335
Hewitt Fe
3rd Pay

Part the mark

gg

No 323 6th Run 2nd Peg. Double Fe 338

Time	Amp	Volts	VOpen	MAH	
800	150	131	157		
850	134	119	134		
850	122	110	125		
905	119	104	116	143	
925	113	99	110		
940	113	95	106		
1000	108	91	104	245	
1020	105	93	104		
1040	102	87	102		
110	101	89	102	368	
1130	100	86	102		
1145	99	86	102	426	off
					off
1240	125	109	116		
100	119	103	120	468	
120	114	100	118		
140	109	95	114	544	
155	102	89		569	
210	99	85		594	
225	78	67		612	
240	66	53			
300	59	51			
315	53	46			
335	38	32			
400	10	8			
					off
815	345	85	136		7th Run
830	300	76	128		4th Peg
850	289	72	122		
910	259	65	112		
940	235	58	102	397	
1000	220	54	98		
1020	117	29		529	
1050	96	24			
1120	20	5			
					off

323 8th Run 2nd Peg
Double He 338

Time	Amp	Volts	VOpen	MAH	
845	112	100	142		
855	100	88	135		
900	106	94	131		
925	105	93	129		
940	104	92	129	95	
955	103	92	128		
1013	101	89	124		
1030	93	82	112	179	
1045	91	80	107	202	
1105	91	79	108	232	
1125	89	78	107	262	
1143	89	77		288	
1215	89	77		329	
130	88	75		440	
240	18	58		531	

No 323. 9th Run 2nd Peg.

Time	Amps	Volts	Open	Watts
8.15	142	[illegible]	145	
8.35	140	114	128	
8.50	138	113	128	85
9.10	138	112	127	
[illegible]	138	111	126	
9.40	138	111	126	200
9.55	135	110	126	234
10.10	135	110	125	268
[illegible]	133	109	125	301
10.40	133	108	124	335
11.00	132	107	124	379
11.15	129	106	122	412
11.30	128	104	121	443
11.45	99	71	85	471
12.00	78	62		492
12.15	71	60		510
12.30	70	57		528
12.45	60	49		544
1.00	40	32		557
10				

3rd peg

No, 324. Empty 5.35 107/1000
Filled 10.25
Magnesia same as 323. 6 parts
Plumbago 4 11
Mount 10 H.
Cathe 100 Ohm. Cup 50 Ohm.

Time	Amp.	Volts	V. Open
1054	290	120	150
1102	250	107	127
1108	245	104	125
1114	240	103	123
1120	236	101	120
1126	231	99	118
1132	226	97	116
1135	218	94	108
1151	202	86	106
1157	190	80	99
1203	185	78	97
1209	181	77	95
1215	178	75	94
1221	161	69	92
1227	90	38	
1233	88	37	
1239	85	36	
1245	82	35	
1251	75	33	
1257	65	28	
106	53	23	
112	43	18	

1st Run No 322 70

132 Watt.

222

297

352

379 Watt.

Calipers 139

324 – 2nd Run (322 from poly mg)

755	282	118	139	Mathew
820	224	95	113	105
830	205	87	103	140
845	200	84	100	190
9	190	80	95	238
930	163	70	84	282
930	240	115	126	
950	125	62	80	343
1005	99	41		
1010	94	40		
944	302	113	136	
922	270	105	128	
932	246	95	116	
942	216	83	100	
1001	208	78	97	159
1016	200	77	92	
1033	186	72	89	
1048	180	66	84	
1100	145	56	74	370
1115	109	42	60	
1131	83	31		435
1146	73	28		
1147	248	96	122	
1201	141	54	80	492
1215	125	47		
1215	137	47		
1200	89	33		
1207	80			575

now Fe 321

off

3rd Run
10322 Fe

3rd Pay

now 10329

off

324 4th Run Double Fe 340

Time	Amp.	Volts	V Open	MAH
831	305	114	138	
848	264	102	125	
901	260	101	123	
916	252	99	122	207
931	250	97	121	
946	242	94	119	
1001	239	92	117	
1016	237	88	115	450
1031	133	51		495
1046	121	47		
1104	90	34		550
1119	15			

4th Run
3rd Pay

5th Run
Double Fe 339
3rd Pay

801	310	115	132	
816	256	99	123	
831	237	98	121	
846	219	86	117	196
901	241	95	118	
916	241	93	117	
931	235	87	114	379
946	233	87	112	435
1001	200	76	106	493
1016	114	43		
1031	98	37		538
1046	78	29		
1101	50	19		596

6th Run
Double Fe 341
2nd Pay

801	160	130	150	
821	140	113	129	
851	133	110	124	
906	133	108	122	151
926	131	105	118	
941	129	102	114	
1001	123	99	114	270
1021	117	95	104	
1051	114	92	103	
1111	112	90	102	405
1131	111	89	100	
1146	109	88	100	470
1151	139	105	124	
101	73	59		504
121	62	50		

off

off

324 7th Run 4th Peg.

816	430	94	132	
831	318	83	116	
851	307	71	102	
911	265	69	98	
941	259	60	92	411
1001	130	30		
1021	113	26		
1051	70	16		520
1021	10	2		

8th Run
4th Peg

430	950	110	153
448	348	85	116
500	306	74	103
515	292	72	100
530	280	68	98
545	239	59	
630	85	20	
650	20	4	

9th Run
3rd Peg
After being changed the horse at 300 Mile

815	280	110	150
835	242	103	127
855	208	87	106
915	193	82	102
935	193	81	101
955	191	80	100
1015	185	78	98
1045	97	40	
1105	89	37	
1125	81	34	
1145	20	6	

358 Mile

148 Cal

After changing
was put out to
dry for 3 days
April 22. 1901 T. 309. Mile

324 10th Run 3rd Peg

832	318	122	157	
851	255	101	127	
911	243	95	122	122
915	230	90	118	193
924	219	85	114	253
954	201	79	107	313
1009	178	70	97	370
1024	109	41		410
1052	75	20		450

Was Changed in air for 3 days after being put out

11th Run
3rd Peg

810	313	118	152	
820	273	103	130	
834	258	96	129	111
846	251	95	122	162
902	245	93	120	225
922	235	89	117	308
932	224	87	115	346
950	210	77	109	432
1000	145	55		462
1035	93	35		531
1053	72	23		555

off

324 125 Ohm Constant Current

Time	Amp.	Volts	VO	Ohm	MATT
858	150	135	154		
914	150	120	132		
929	150	117	129		
951	150	103	115		
1010	150	95	107		
1038	150	97	110		
1100	150	94	107		
1124	150	92	105		
1145	150	91	104		
1145	150	89	104		
1230	150	109	125		
102	150	45			
115	150	35			

337 Fe

425 off

487.5 off

No. 325 Empty 5.35 107/1000

Filled 10.25

Magnesia same as 323 6 parts

P. lumbr. 4 "

Moist KOH.

Cake 100 Alum. Cup. 100 Alum.

3rd peg

Time.	Hh.	Amp.	Volts.	V. Open.
11				
115	235	104	116	
124	127	76	85	
130	168	70	84	
136	160	67	80	
142	150	64	76	
148	145	61	73	
155	135	58	68	
201	130	54	66	
207	114	48	60	
213	92	38	48	
219	80	34	44	
225	67	28		
230	230	96	114	
330	20			

1st Hour 322 Fe

110 MATT.

156 "

New Fe.

165 MATT.

off

Calliper 127

325 2nd Run — 321 Fe

1012	225	96	110		Think Fe weak
1030	200	84	98	63	
1050	183	77			
1103	162	68		164	
1110	250	107	126		new good Fe 322
1125	220	93	112	222	
1140	192	82		272	
1205	180	76		359	83 Von 2nd pag
1220	170	71		400	
1235	139	59		458	
1245	71	30		475	
110					66

918	305	114	147		3rd Run No 32 Fe
923	280	108	132		
928	269	102	127		
948	268	98	124		
1003	248	93	120	199	
1018	230	87	112		
1036	204	77	100	317	
1051	186	73	96		
1106	156	63	83	415	
1121	173	65	85		
1132	158	60	85	490	
1147	88	35	55		
1202	89	33			
1205	129	48	80	545	
1218	49	18			
1246	80	26			
1201	19			566	

152 Cooper

Think Fe No 321 —

325 4th Run — Double Fe 341

Time	Amp.	Volts	V Open	MAN	
832	312	116	138		4th Run
849	272	103	124		
902	228	102	121		
917	262	100	122	207	
932	237	96	120		
947	250	95	119		
1001	249	92	117		
1017	330	87	114	456	
1032	133	57		501	
1047	119	45			
1105	56	21		559	

802	305	113	149		5th Run Double Fe 340
817	257	98	129		
832	245	93	117		
847	237	90	113	192	
902	232	88	110		
917	228	85	107		
932	220	83	105	369	
947	219	79	102	418	
1004	202	76	100	469	
1019	172	56	85		
1032	110	40		546	
1047	98	37			
1112	76	28		544	

802	156	125	147		6th Run Double Fe 344 2nd pag
822	143	116	131		
852	139	111	126		
907	137	109	123	154	
927	133	107	120		
947	131	104	117		
1002	126	102	114	276	
1032	122	97	110		
1052	118	94	107		
1112	114	92	115	417	
1132	114	91	104		
1147	112	90	102	483	
1242	140	111	125		
102	111	88	102	525	
122	63	50			
142	59	47			

325 7th Run. 4th Peg

817	450	100	138	
832	400	90	128	
852	375	86	126	
912	363	81	122	
942	268	46	95	479
1002	160	36		576
1022	55	12		
1052	15			

7th Run
3rd Peg

843	280	118	138	
853	250	106	125	
911	242	102	122	118
921	239	100	120	158
943	228	97	118	244
956	220	94	116	298
1010	212	89	111	348
1032	190	84	104	421
1052	122	54		
1102	104	43		
1120	95	40		
1135	82	36		
1203	43	18		
1257	90	38	121	
130	13	5		

Put out to dry for 3 days after discharging.
Apr. 2/2 1901
130 P.M.

325 9th Run 3rd Peg

Time	Comp.	Volts	Volts	Min.	Mill.
100	280	120	151		
105	43	134	127		
135	235	101	124		
205	233	98	121	185	
800	226	95	118	242	
815	214	90	115	297	
830	205	86	109	350	
845	197	83	106	402	
900	167	70	100	448	
910	100	42	60	492	
930	98	40		509	
945	84	35		532	

Was [illegible] air [illegible] from being discharged [illegible]

May 3. 1901 Gave 32.5 to Roy [illegible] To make tests with

3rd pay

No 326 Empty 5.35 99/1000
Filled 10.1
Mag canne or 323 6 points
Plumbago or 4 "
Morst MOH.
Cobra 50 Alum. Cup 100 alum.

Time.	Vol. Chimp.	Volts.	V. Open.
1.22	230	104	141
1.28	215	95	112
1.34	209	86	103
1.40	205	84	102
1.46	201	83	101
1.52	200	82	99
1.58	197	80	98
2.04	192	79	96
2.16	181	74	92
2.10	181	67	86
2.28	141	58	78
2.40	110	45	70
2.46	100	42	68
2.53	92	37	65
2.59	86	36	
3.05	80	33	
3.11	75	31	
3.18	70	29	
3.24	69	28	
3.30	66	27	
3.36	62	26	
3.43	60	24	
3.49	55	23	
3.55	51	22	
4.01	47	20	

8th Run
No 327 Te
104 Mark
175
3rd Pay
248
316 Mark.
332 Mark.
98
Cathepsin 135

326 2nd Run —

7E10322 300 mah
out of st. when put
on F. not fully
charged but listed at
ff Lua before my
goes on st.

1250	185	78	92		
110	139	59	71		
119	120	52	65	100	
135	72	31	42	126	
140	68	28	40		3rd Peg
146	60	26	36	138	
148	58	25		149	
149	250	109	126		
	199	85	105	185	
	195	88	102		
	194	82	101		
	190	80	99	253	
245	188	79	98		
250	172	73	92		
253	136	58	76		
258	120	51	71		
260	83	35	58		
323	70	29	55	348	
329	58	24			
335	52	22			
341	46	20			
354	41	17	ff	389	MAH

No 326

926	290	114	140		3rd Run
938	259	105	130		No 37876
951	250	102	126		3rd Peg
1006	242	99	123	167	
1022	222	90	113		
1040	200	81	105		
1055	190	77	98		
1110	180	73	94	390	
1125	170	69	92		
11.33	150	60	88		
11.48	92	39	60		
1203	80	36		509	
1218	68	26			ff
1247	55	32			
1202	16			541	
215	295	120	142		4th Run
230	266	108	129		Needle F.C.
250	253	166	124		3rd Peg
305	249	104	125		
320	241	102	123	258	
330	235	100	122	298	ff
345	255	104	130		on
400	232	98	120		
415	224	94	118	416	
430	131	55	85		
445	120	50			
500	98	40		519	
515	25	8			ff

326 5th Run 2nd Peg No 339 Fe

145	145	124	130		
200	128	112	124	34	
230	110	97	107	92	
245	108	94	104	119	
300	107	93	104		
315	107	93	103		
330	107	93	103	198	
345	107	92	102		
400	105	92	102		
415	104	92	101		
430	104	91	100	276	
445	103	89	100		
500	102	89	99		
530	100	88	98	379	
545	100	88	98		
600	100	87	98		
615	100	87	98	454	
705	126	109	122		
720	109	95	116	484	
735	70	60		510	
750	58				
800	50	42		538	
839	820	64	130		
840	722	60	126		
850	566	47	120	120	
910	490	43	91	296	
920	428	40	89	373	
928	295	23	75	421	
940	200	18		518	
955	163	13		563	
1005	128	10		587	
1017	58	3		606	

6.15 4.00
145
720
705
447 Watts

6th Run 6th Peg
70

326 7th Run on 5th Peg

Time	Amp	Volts	Watts	Watt Hours	
820	285	118	150		
835	241	102	126	66	
845	237	100	125	106	
915	220	92	116	220	
930	209	88	111	273	
945	199	84	106	335	
1006	190	80	102	393	
[illegible]	181	76	100	433	
[illegible]	99	41		466	
[illegible]	82	33		500	
[illegible]	60	24		540	
1150	17	6			
825	155	133	154		
830	137	120	133	30	
835	124	113	132	59	
910	132	116	129	113	
925	131	114	127	136	
940	123	109	120	125	
[illegible]	[illegible]	[illegible]	[illegible]	198	
[illegible]	113	97	107	225	
[illegible]	105	95	106	253	
1040	109	94	106	280	
1055	108	93	105	316	
1105	107	93	105	343	
1130	107	92	104	390	
1145	105	91	104	378	
1200	103	91	103	423	
1215	98	89	102	455	
1236	60	52		467	
1215	58	49		482	
100	54	47		496	

After being discharged on the first peg it was always at 6 in more than changing to see if it was load.

414 Watt Hours

5th Run on 5th Peg
Watts 225

2 Watt Hours

Third Peg Fe.

326 9th Run 2nd Pcg. Unable Fe 339

Time	Amp.	V	H.	V.	Opar.	M.O.H.
800	168	138	156			
730	151	120	132		51	
730	124	117	130		74	
840	132	116	125		93	
850	115	103	114		133	
916	113	99	109			
932	112	98	105		178	
958	110	97	107		231	
1010	110	96	107			
1025	113	96	106		275	
1053	105	95	106		346	
1106	159	94	105		370	
1125	107	93	104		403	
1140	105	91	103		424	
1205	62	53			464	
[illegible]	62	45			500	
[illegible]	45	[illegible]			517	

After the 8th Run this was changed on the wiring diagram from the line. Now it runs as marked & changed.

No. 327 Empty 5.6 103/100 Oz.
Filled 11.55
$7 Fe_2O_3$ reduced in H_2 at 500°
Same as 321 8 Parts
Plumbago 2.11
Moist KOH
Cake 100 Atm. Crup. 100 Atm.

No 328 Empty 5.3 $\frac{102}{1000}$
Full 11.35
Fe same wt 321 8 Parts
Plumbago 2 "
Moist KOH
Cake 100 Alum Cup 100 Alum.

Time	Amp.	Volt.	V. Open	MAH

328 was coupled with 327 to make a double test Fe.

No. 329 Empty 5.4 99/1000
Filled 11.4

Fe_2O_3 reduced in H_2 & kept in H_2 for 6 hours. Magnetic 8 parts
P-homology 0 2 11
Moist KOH
Cathe 100 Ohm Comp. 100 Ohm

Time	Amp.	Volts	V/Amp.	H_2O	
140	325	123	150		1st Run
150	289	111	130	51	
200	280	107	125	99	
215	270	104	125	147	
230	259	99	118	233	
245	241	93	111	297	
310	243	86	103	393	
325	220	85	101	448	
345	216	83	99	521	
410	204	79	96	608	
425	199	78	94	657	
500	106	41		735	Put in 2 New Michels
513	255	98	120		
515	229	88	106		
530	205	79		797	
540	194	75	92	830	
600	180	69		893	

1st Run
2nd Run
with 2 McHeff guts

329. 2nd Run 3rd Peg. 32

Time	Amp.	Volts	V Open	Math.
130	243	102	149	
150	229	93	132	
200	215	88	130	
224	208	87	126	142
242	200	84	122	256
255	198	83	119	299
320	187	78	109	379
342	182	76	107	447
350	181	74	105	489
410	177	75	104	531
432	174	73	101	596
450	171	71	100	648
500	169	70	99	676
515	163	69	97	717
538	157	63	93	778
5[illegible]				8[illegible]

3rd Run 3rd Peg
359 Min Inspect

745	300	125	153	
800	[illegible]	109	132	
820	250	105	127	
836	230	100	121	221
853	218	91	110	284
910	212	89	107	345
934	207	87	104	429
947	201	86	103	463
957	199	84	102	496
1010	197	83	100	549
1023	190	79	97	607
1035	183	78	94	638
1115	165	69	86	766
1127	158	66	83	798
1147	143	61	76	823

329. 4th Run Constant Current on Slide resistance.

Time	Amp.	Volts	V Open	Math.	
11[illegible]	[illegible]	[illegible]	[illegible]		
855	150	134	147		
907	150	124	136		
915	150	123	134		
930	150	121	132		
950	150	118	130		
1011	150	117	129		
1040	150	118	126		
1100	150	112	124		
1125	150	109	122		
1144	150	105	117		
1149	150	103	116	435	
1247	150	114	133		
111	150	95	109		
127	150	78		545	
1[illegible]					

5th Run Constant Current

748	150	137	150		
757	150	123	134		
820	150	118	130		
849	150	115	127		
901	150	111	124		
926	150	100	113		
940	150	97	110		
1007	150	95	108		
1034	150	91	105		
1057	150	88	102	473	
1117	150	86	100		
1132	150	83	98		
1149	150	80	96	515	
1157	150	78	94	535	
1236	150	110	125		
1256	150	87	102	585	

329

Time	Amp.	Volts	Open	Watt.
119	150	79	94	642
138	150	70	87	
157	150	59	77	737

After fully discharging ~~the~~ rotor to be taken out + laid in air to dry for 3 days,

9.05	150	125	142		6th Run
9.14	"	113	128		Running on single
9.28	"	112	127		nickel.
9.40	"	110	125		
1000	"	108	123		
1020	"	105	121		
1040	"	102	119		
1100	"	96	115		
1120	"	43		337.	off Run Ni. single
1121	"	121	139		
1141	"	97	112		
1202	"	93	108	440.	
105	"	114	130		
121	"	99	114		
144	"	92	107	537.	
205	"	89	104		
226	"	85	101	642.	
246	"	77	96	692.	
258	"	22		720	

After discharge to be changed + put in air for 3 days + discharged.

N.G. Ajm Village 44 was unable to get 150 M.a. out.

No. 330 Empty 5.25 93/1000
Filled 11.45
Fe_2O_3 reduced in H + kept in H for 6 hours. Non Magnetic 0
Pleumbago 2
Moist NOH
Cake 100 Atm Cup 100 Atm

Time	Amp.	Volts	Open	Watt.	
155	315	119	151		1st Run
210	277	106	130		1st Pig
225	268	103	126	142	
243	251	97	118	220	3
256	234	90	109	272	
320	223	85	104	364	
340	212	81	99	436	
356	200	77	96	491	
412	190	73	92	543	
434	173	67	86	610	
450	161	62	80	654	
500	151	58	75	680	
515	137	52	70	716	
537	110	42	55	762	off

330. 2nd Run 3rd Deg. 356 Mi Triplet.

Time	Amp	Volts	Volume	Matt
748	315	120	151	
800	273	105	128	
820	257	99	121	
838	237	91	112	221
857	227	87	106	283
977	217	83	102	346
935	202	78	97	430
945	195	77	94	453
955	187	72	90	485
1010	178	69	87	530
1025	164	63	82	582
1035	152	59	76	608
1115	110	42	65	691
1128	105	40	55	712
1148	100	38	57	730

3rd Run
constant current on slide resistance

157	150	136	150	
200	150	126	138	
211	150	122	134	
222	150	120	132	
232	150	119	131	
245	150	117	129	
305	150	116	128	
328	150	114	126	
352	150	111	123	
415	150	108	120	
425	150	104	116	
500	150	96	108	
521	150	94	106	
542	150	92	104	
559	150	89	101	
608	150	88	100	628

330. 3rd Run Continued.

Time	Amp	Volts	Volume	Matt	
721	150	114	128		ow
729	150	107	118		
757	150	91	104		
810	150	85	100	755	
833	150	76	94	808	
849	150	22		848	

May 3, 1901 gave 330 to Rufus to make some tests.

330 at 325 For Rufus

853	150	116	136		
906	"	110	126		
926	"	107	124		
948	"	105	121		
1000	"	98	115		
1020	"	89	105		
1040	"	86	104		
1100	"	83	101		
1123	"	49			
1143	"	22		425	
1203	70	8			

No 331 Empty 5.9 99/1000
Filled 10.55
Nitrate Ni Mag washed by decant then treated Hypo-NOH & not washed except on filter. Tried decant but goes from Hypo prevents settling
Phenologo 6
100 after

Time	Amp	Volts	VO	Ph	MAH
5.17	280	115	141		
5.29	245	104	127		
5.44	216	90	111		
5.59	195	80	101		
6.14	182	76	98	210	
6.54	95	40	60		
7.27	72	30			
7.34	54	23			342
7.44	20	10			348
2.16	245	92	142		
2.31	212	81	126		
2.51	202	78	119		
3.05	196	75	116	175	
3.23	120	45			
3.31	115	45			

1st Run
190 3297 e.
3rd Pay

2nd Run
Blanket Fe 340
3rd Pay

No 331 Continued.

3[illegible]6	175	46	126 on		2nd Run
401	110	42			3rd Pay
416	106	40		296	
431	95	36			
446	49	15		339	

146	150	115	142		3rd Run
201	136	108	132		2nd Pay
231	116	93	113		
246	102	90	108		No 340 Fe
301	110	88	106		
316	108	86	105		
331	104	83	104	177	
346	60	48		212	New Fe
356	60	48			
357	82	65			
401	76	68			
416	72	59		269	
431	72	57			
501	67	53			
516	60	48		316	
531	50	40			

N.G. Cracked
Swelled F. 153.

No 332 Empty 6.15 $\frac{103}{1000}$
Filled 10.9

Magnesia big lot dried lumps put in tube + chlorinated dry, ground + washed in filler 6
Plumbago 4

Moist KOH
Cake 50 Alum Cup 100 Alum

Time	Amp	Volts	V Cell	MAH	
515	270	106	130		Lost Power 330 Ta
530	259	99	124		
545	241	93	117		
600	222	85	107		
615	208	79	100	227	
654	193	74	94		
725	180	69	92		
736	174	67	90	479	
745	156	61			
801	90	34			
815	88	33			
830	86	32		595	
845	70	26			
900	50	18			
915	20	5		638	
[illegible]	[illegible]				
[illegible]	10				

No 332 2nd Run Double Fe 341

Time	Amp.	Volts	V Open	MAH		
217	315	114	149			
232	259	98	141		3rd Pog	
252	249	94	116			
307	242	92	114	217		
322	238	90	112			
332	232	88	110	316	70	
347	265	98	120			
402	231	87	110	378		
417	219	82	105			
432	128	48	75	479		
447	119	44				
502	114	42				
517	102	38				
532	46	26			98	
147	50	126	142		3rd Run	
202	143	114	130		2nd Pog	
232	138	110	125			
247	133	108	122		No 341 F-2	
302	132	106	120			
317	130	104	118	172		
332	128	102	116			
347	124	100	113			
402	122	98	111			
417	120	96	109			
432	118	93	107	327		
502	112	90	102			
517	110	88	100			
532	108	86	100	411		
547	86	69				
602	60	46		453	98	

No 332

Time	Mill Amp.	Volts	V Open	MAH		
816	300	116	150			
836	252	98	123			
856	240	93	116	174		
916	225	90	110			
936	219	89	105			
956	210	80	102	397		
1016	200	77	98			
1046	108	40				
1106	103	39				
1126	95	36				
1146	41	18				

98

N.G.

Cracked

Cut out.

No 333 Empire 0.8 62/1000
Filled 3.1
Silver Oxide 6 —
Plumbago " —
Moist KOH 100 Atm.

Time	Amp	Volts	Volts	Amp	AMPH	
33	150	85	99			1st Run May 23 1901.
7	"	77	89			
911	"	70	81			
929	"	55	65			
945	"	55	64			
1014	"	54	63			
1034	"	53	63			
1106	"	50	62			
1127	"	47	58	435		
1143	"	45	52			
1200	"	30		517	77	

Neg. Cut Out.

No 334 Empty 0.8 66/1000
Filled 3.2
Silver Oxide 6
Plumbago 4
Moist KOH 100 Ohm.

No 335 Empty 2.75 59/100
Filled 4.3
MnO_2 6
Plumbago 41
Coke 100 Atm. Cup. 100 Atm.

No 336 Empty 5.35 $\frac{105}{1000}$
Filled 10.15

Sulphate Ni precp. by Mag washed by decant only. Chlorinated as a mush then washed decant + filter finally distilled H_2O 6 —
Plumbago 4 —

Mount KOH
Cake 100 Atm Cup 100 Atm.

Time	Amp.	Volts.	VO	Amp.	MAH.	
817	295	111		149		
837	240	91		120		
857	230	88		116	167	
917	223	85		113		
937	212	80		107		
957	200	76		102	384	
1017	192	72		97		
1047	149	56		85		
1107	106	39				
1127	73	29			604	
1147	6	1				988

No 337 Empty 2.7 4T/1000
Filled 4.15
Ferric reduced 500°C.
Part not touched by bromine 8 —
P bromobenzoate 2 —
Moist KOH
Cake 100 Acton Cup. 100 Acton.

Time	Amp.	Volts	Qcum	MAH
2.45	310	110	148	
2.57	258	97	117	57
3.21	42	16		117

1st Run 3rd Reg.
No 358 Mitriplet.

H.G. Cut Out.

No. 338 Double Iron. 99/1000

Iron oxide from finely divided iron by CO_2 at white heat slightly magnetic.

6 grams net.

No 339. Double fe. — 79/1000

Same as 338.

No 340 Double iron.
Fe_2O_3 reduced in H + kept in
H for 6 hours Magnetic
$\gamma - 2$

No 341 Double iron
Same as 340.

104/1000

No 342 Empty 6.2
Filled 12.5
Iron by H heated with right amount
8 O 8 Porter
8 Plumbago 2 "
This 3rd pay Moist 140 H.
Cake 100 Alum Cup. 100 Alum

Time	Amps.	Volts	O. Open	MAX.	
103	280	118	145		1st Run
176	260	103	124	66	3rd Pay
185	202	85	103		with 2 Nickel Guides
200	191	79	97		
220	101	41		262	
150	308	117	147		2nd Run
220	220	85	102	132	3rd Pay with
235	200	79	96	185	3 Nickel Guides
250	102	37		224	
315	20	6			

Mg cut off

No 3.43 Empty 5.5 $\frac{92}{1000}$
Filled 10.3
Fe by reduction in H below
500°F 8
Plumbago 2
Moist H O H
Cake 100 Alum Cup 100 Alum

Time	Amp.	Volts	Open	H.O.H.	
7:15	274	113	144		1st Run with
7:25	200	87	102		on 3rd Pog with
7:50	133	55	75	118	2 Nickel grids.
8:05	60	26		142	323 + 336
8:20	42	18			
8:30	36	14		165	

Humble Fe 91/1000

No 344 Empty 5.4
Filled 10.7
Fe_2O_3 by H in Oven at about 700° 3 hours run, 5 hours cooling 5
Phenolphthalein 2
Moist KOH
Cake 100 Atm. Cup 100 Atm

Time	Amps	Volts	Ohms	MAH	
825	308	116	145		1st Run with on 3rd Pop with 2 Nickel Spikes.
835	273	103	126		
850	259	84	102		
905	213	80	100		
930	207	79	97	226	
930	199	76	94	260	
945	170	65	87	306	
1000	130	50		357	
1015	106	40		375	
1030	79	31		413	
1100	62	23			
946	306	116	151		
956	269	102	128		
932	217	82	103	113	
942	211	80	100	148	
956	198	75	96		
1019	178	67	85	252	
1032	150	57	80	301	
1042	90	45		331	
1107	80	30		340	
1127	60	23			

My Cutout

M0345 Empty 5.5 102/1000
Filled 12.05
Same as 338
Double File.

Ho 346 Empty 5.5. 115/1000

Filled 11.9

From Fe_2O_3 by H at 900-800 or 5 hours. Cooling for 9 hours

Y Paste

Plumbago 2

Moist KOH

Coke 100 Alum. Cup 100 Alum.

Time	Amp	Volt.	V. Open.	MAH	
115	285	124	149		1st Place
125	277	116	135		on 3rd Pot with
140	269	113	132		2 nickel plates
152	265	112	130	169	
220	260	109	128	292	
235	258	108	126	357	
250	253	107	126	421	
315	251	105	125	568	
340	239	100	123	710	
400	149	60		774	
420	139	58		820	
445	130	55		876	
500	116	48		907	
525	60	24			

No 346 2nd Run 3rd Peg with 2 Nickel guide.

Time.	Amp.	Volt.	V.Open.	MAH
900	310	118	155	
915	262	102	129	
925	258	100	128	115
940	249	97	124	178
955	237	92	116	
1013	218	84	104	307
1030	185	70	96	367
1046	149	57		409
1106	120	46		454
1126	80	31		487
				off
226	250	104	147	
240	190	79	108	
305	69	29		
325	40	16		
				off
308	150	135	151	
329	"	125	137	
345	"	112	124	
407	"	68		
				off

3rd Run
3rd Peg.
Tried New Nickel
4th Run
May 4 1901
off
N.G. Cut Out.

No. 347 Empty 5.6 103/1000
Filled 11.1
Copper Hydroxide 6 Parts
Plumbago 4 —
Moist KOH
Cobra 100 Atm. Cup 100 Atm.
With Zinc negative pole.

Time.	Amp.	Volt.	V.Open.	
11.035	90	157	156	1st Run before it was changed. First Peg.
1158	55	90		
508	53	89		
518	56	92		
556	113	159	198	2nd Run was changed until it quiet. First Peg
602	102	171	175	
610	61	100		
613	57	86		24 MAH
614	56	92		
616	61	100		
631	61	104		
641	61	104		
653	61	104		
708	61	104		off 72 MAH.
920	65	1035		on
935	65	103		
1058	65	1025		off 122 MAH
1100	64	106		on
1125	61	103		
1130	605	103		
1145	605	102		
1200	60	102		
1215	60	101		
1235	59	98		
1255	57	94		
125	50	84		off 221 MAH.

	Amps	Volts	
730	60	107	
736	46	77	
750	43	73	
805	42	72	
820	48	84	
920	44	78	
940	46	79	
1000	46	79	375 max.
1020	47	81	
1047	50	89	412 "
1107	50	84	
1127	49	83	446 "
1147	48	80	
1202	45	78	
1245	42	72	
105	41	70	519 "
120	40	69	
140	40	69	
200	41	69	557 "
220	40	69	
245	40	69	
315	40	69	
330	40	69	
345	40	69	
425	40	69	
P.M. 600	40	69	717 "
P.M. 10.15	40	69	
A.M. 805	40	68	1110 max.
900	40	67	1150
1000	39	65	1189
1015	39	65	1238
1125	38	64	1283
1200	37	63	1304
100	37	63	1341
240	36	62	1406
400	36	62	
530	36	60	1538
P.M. 9.00	30	56	1653
9.45	18	29	197

Cut Out

No 348

106/1000

Peroxide Barium 6

Plumbago 4

Moist 10/14

Cake 100 after Cup 100

Weight 6.2

Time	Amps	Volts	VO	Sec	M.A.H.
846	67	106		148	
849	40	62			
850	36	54			
852	30	44			
855	20	29			5.6
910	19	28			
918	18	28			
919	18	28			
935	18	27			

Cut Out

349 Coke 6.85 gm. 105/1000

Iron made the gas flame from soft iron wire. 80 —

Plumbago 2 —

Most KOH.

Coke 100 Atm. Cup. 100 Atm.

Time	Amp.	Volts	V Open	MAH	1st Run 3rd Peg.
200	301	116	140		This is probably an
215	242	94	108	68	unfair test as I used
225	223	87	102	103	the nickels on 351 +
235	219	85	100	139	they are practically exhausted
245	213	82	97	175	
310	175	70	82	258	
350	60	23		335	off
					2nd Run 3rd Peg
227	318	121	149		
242	257	99	118		
306	222	85	103	147	
326	145	56	65		
347	54	21		265	off Tried new Ni.

N. G.

[illegible]

350.

Wt. 6 grams. $\frac{104}{1000}$

CuO By roasting carbonate at red heat. 6 —

Plumbago 0.4 —

Moist KOH.

Cake 50 Ohm. Cup 50 Ohm.

Time	Cup.	Volts	Open	Matt.	
10.24	60	100	108		1st Run Fast Pcy.
1031	43	75		6	
1040	40	70			
1050	40	70			
1114	40	69		35	
1146	38	66		50	
1204	38	65		62	
12.56	38	67			
1.33	40	70		86	
2.03	42	72		102	
2.35	43	76		131	
250	45	78		140	
315	47	80		152	
330	47	80			
400	47	80			
420	47	80			
500	47	81			
535	47	81			
550	47	81		273	
6.15	47	81		283	
6.50	38	65		667	
730	37	64		723	
700	37	64		779	
7.50	38	66		849	
830	40	67		945	

Time	Amp.	Volts	VOpen	MAH	
615	42	76		1053	P.M.
855	27	95		1559	A.M.

Cut Out

351. Wt of Coke 6.9 $\frac{110}{1000}$

From 07e by H by giving definite amount of air deducing 2 deduce at 260° F $\frac{8}{}$

Plumbago 2

Moist KOH 100 Ohm.

Time	Amp.	Volts	VOpen	MAH	
100	292	114	140		
112	258	101	118	55	
132	156	60	75	124	
142	51	20		141	
152	23	8			

88

Cut out

352 Wt of Cube 4. grams $\frac{109}{1000}$
Iron Oxalate Ferrous 6 —
Plumbago 4 —
Moist KOH. 100 atm.

Swelled & busted grid all to pieces. This is good to test the grid with.

Cut Out

353 Wt of Cake 6.0 $\frac{97}{1000}$

Some Iron oxide by heating oxalate till point of decomposition.
Cooling + probing H for 6 hours 6—
P Ferrocyanide 4—
Moist KOH 100 Ohm.
The original cake was $\frac{97}{1000}$ + when put in the pocket + pressed it squeezed out part of the iron untill it was only $\frac{85}{1000}$ so this is not a fair test. Have to go be cause the oxide is used up.

Time	Amp.	Volts	VOpen	Watt	
2.34	3.18	1.18	1.40		1st part
2.48	2.57	.95	1.10		3rd part
3.07	1.78	.67	.85		
3.27	1.25	.46			
3.48	.93	.35			

Tried new Ni

N.g.

Cut Out

354-55-56-57-58-59. Test Nickels. 3 Guide.
Wt of Cake 4.7 grams. 101/100.
5 lb. lot made in kettle using MgOH made in iron tanks. Chlorinated 6 to 8 hours. Then washed by percolation for 4 days till little precip by Nit Ag. Dried gently. NiO showed spring cracks on drying. 6 —
Plasticity. 4 —
Most KOH. 60 Atmospheres

Time	Amp.	Volts	YO Pum	MgH	
920	150	132	145		No 354 single Ni to test.
931	150	121	137		
949	150	116	132		1st Run constant current.
1012	150	112	128		
1041	150	107	123		
1602	150	95	119		
1127	150	85	108	312	
1141	150	27		338	
256	150	136	149		2nd Run constant current
310	150	121	136		
327	150	116	134		
343	150	100	115		
355	150	92	108		
415	150	90	107	197.	
450	150	27			

7th Sept. 1915 [illegible]

833	150	94	148		3rd Run
858	150	87	132		constant current.
918	150	72	128		but resistance is very high.
952	150	32	108		
1015	150	16	106	255	

4th Run.

115/1000

360. Mg Cake 6. grams
Ferrous oxalate from oxalate by heat. Left for 3 hours in CO_2 8
Plumbago 2
Moist KOH. 60 Phosphorus

Filter change at 4.15. Going at 4.45

	Amp.	Volts	V Open	MAH	
712	300	116	145		1st Pass
713	120	45			3rd Pass
716	56	26			

N. G.

Cut Out

105/1000

3.61 Ferrous Oxide from oxalate
put into 5% soda mixed
with graphite (probably two times)
& squeezed in cloth & dried
in CO_2. Heated to heat by
exposing to air. Neither propor-
tions or weight is known
exactly. | 60 Atmospheres.

Put on to charge at 4.15, passing at 4.45

Time	Charge	Volts	V Open	M.A.H.	
7.15	315	116	147		1st Run
7.25	130	60			3rd Reg
7.37	55	24			

N. G.

Cut Out

3.62 Wt of Coke 5.5 $\frac{104}{1000}$

Ferrous oxalate kept in CO_2 2 hours. Put into beaker of gasoline. Gasoline evaporated to thick sludge. 8 grams was mixed with 1.5 grams of graphite to allother for part of gasoline. 80 Ohm

Put to charge at 4.50 quiting at 5.20

Time	Amps	Volts	V.O.	Remarks	M.A.H.	
7.26	282	113	1.45			1st hour
7.37	96	39				3rd pay
7.43						

N.G.

Cut Out

101/1000

3.63 Wing Cabe 4.7

Single nickel for testing. Same as nickels 3.04 – 3.59. 6 —

Pennsbury 0.4 —

Moist NOH 6.0 Alum.

Time	Amp.	Volts	V/open	Mat.		
7.01	285	121	155			1st Run
8.10	253	106	130			3rd Pig
8.38	235	90	113	157		
9.01	189	73	104	203		
9.21	189	45		253		
9.31	98	37		270		Acid Neut. F.e.
7.57	318	120	157			2nd Run
8.15	295	105	132			3rd Pig
8.21	222	84	107			
[illegible]	213	80	104	195		339 double F.e.
8.55	200	76	102	250		
9.12	98	37	[illegible]	292		
9.36	96	36		331		
9.[illegible]5	87	32		347		

Put with another grid of the same.

364 Wt of Coke 6. grams. $\frac{103}{1000}$

Fe by reduction in H of Fe_2O_3 from oxalate. 1 Hour at about 650° F.

8

Plumbago 2

Moist KOH. 75 Atm.

Time	Amp	Volts	Volum	Wat H
117	150	137	152	
129	150	120	131	
152	150	118	129	
219	150	117	128	
255	150	117	127	
306	150	115	126	
326	150	114	125	322.
342	150	114	125	
375	150	114	125	
416	150	113	124	447.
429	150	112	124	492.
452	150	112	124	
523	150	112	124	615
577	150	111	123	655
601	150	110	122	705
625	150	108	120	757
637	150	106	119	795
650	150	101	116	835 off
730	150	112	130	
733	"	103	118	
740	"	94	112	860 (over)
745	"	75		872 drops all off suddenly

364

1st Run Continued

Time	Amp	Volts	Vo Open	Watt	
747	150	118	135		Put on New Ni.
750	"	106	122		
805	"	99	115		
831	"	90	106		
850	"	53	100	1030	
903	"	44	55		off
					2nd Run
135	150	133	149		
153	"	120	132		
218	"	117	129		
235	"	115	127		
301	"	103	114		
326	"	100	111		
344	"	100	110		
407	"	96	108		
434	"	91	102		
453	"	87	97	495	
515	"	37		550	off
					Tried New Ni

May 3 1901 3rd Run

803	150	130	145		
805	"	122	134		
822	"	119	132		
840	"	117	129		
858	"	114	127		
915	"	106	118		
935	"	99	111		
955	"	97	109		
1015	"	94	105	330	
1030	"	91	102	368	off

364

3rd Run continued

Time	Amp	Volts	Vo Open	Watt	
1031	150	112	121		New Ni
1041	"	100	110	393	
1056	"	94	104	455	
1116	"	54	65	505	off
					N.G.
					cut out

365 Mtg Cake 2.15 $\frac{75}{1000}$

Ferrous Sulphate in boiling KOH. precipitate, filtered, — dried. 6

Plumbago 4

Mont KOH. 75 atmos.

Time	Charge	Volts	Volts	Amps	1st Run
2.29	150	122	143		constant current slide resistance

off Mg Cant keep up the current drops very quickly

grid burned.

Cut Out

366 Mfg Cine 1.85 $\frac{60}{1000}$

Fe from amalgam. 6 —
Phosphor. 4 —
Moist KOH 75 Ultimo.

Time	Amp.	Volts	Open	MAH	
150	150	128	149		1st Run constant current.
214	150	117	134		
231	150	105	124		
300	150	75	130	155	
311	150	51		182	
316	150	29		195	
216	150	120	150		2nd Run constant current
236	"	86	112		
300	"	25	55	110	

N.g.
Cut Out.

Cupric hydroxide treated in Hypochlorite Soda — then washed dried & put in grid 6 to 4 wt 7.2 for brick This has been Charged for 2 hours on Current of 8 Ag the Copper Zinc Neg used 20% KOH, 1st peg —

Time	Amp.	Volts	Voltage	Watts	
5.35	200	175	190		By not listening to what was said by 2nd peg of Charging 8 ft to 1st peg.
538	95	170	175		
543	90	158	163		
550	69	112			
555	45	80			
600	48	83			
605	56	98		32	
724	58	100	114		
740	58	100	108		
758	58	100	108		
823	55	98	107		
852	52	94	106		
945	44	79			
1127	42	75		142	
1230	40	72		185	on all night
723	40	69		420	
600	40	69		565	
100	39	67		750	
248	38	65			
4—	38	68			
612	38	67			
710	38	68	87	1374	on all night
945	38	66		1431	opened Ckt for 10 minutes Volts went to .87 —

Time	Amp	Volts	MAH
1200	36	63	1513
320	.34	.59	1689
640	30	.52	1736
735	.45	80	
739	30	53	

Was left open for 45 min & voltage went up to 88 open.

Was all down in the morning

Cut Out

368 6 g. 104/1000

Fe_2O_3 from oxalate reduced by H at 700 – 800°F for 1 3/4 hrs.

Plumbago 2

Moist KOH 75 Ohms

1 of Pure constant current on Slide Rheostat

Time	Amp.	Volts	VO	MAH
151	150	129	147	
215	150	118	135	
232	150	116	133	
300	150	114	130	
317	150	114	130	
325	150	113	130	
352	150	112	129	
410	150	111	129	
425	150	111	129	
[illegible]	150	110	128	
502	150	109	127	480
524	150	108	127	
546	150	107	127	565
[illegible]	150	107	126	623
620	150	105	125	673
647	150	110	134	
708	150	104	125	735
728	150	101	124	775
748	150	97	120	825
808	150	43		875

36.8

2nd Run Constant Current.

Time	Amp.	Volts	V open	MAH.	
858	150	125	145		
926	150	91	106		
942	150	90	105		
1008	150	89	103		
1020	150	86	100	205	
1023	150	102	118		new Mi.
1035	150	95	110	235	
1047	150	92	107	265	
1058	150	90	106	292	
1110	150	88	104	322	
1125	150	87	104	359	
1146	150	84	102	411	
1158	150	84	101	441	
1235	150	116	131		
1257	150	104	118	496	
118	150	91	106	548	
137	150	85	101		
158	150	81	98	648	
218	150	78	96		
240	150	75	93	753	
308	150	64	86	823	

36.8

3rd Run Constant Current

Time	Amp.	Volts	V open	MAH.	
924	150	138	152		
954	150	117	133		
1016	"	115	130		
1032	"	110	126		
1049	"	108	122		
1124	"	93	107		
1143	"	92	105		
12.00	"	91	104		
106	"	117	131		
130	"	97	109		
158	"	90	103		
219	"	87	101		
237	"	84	99		
259	"	80	96	673	
325	"	75	92		
343	"	73	88		
408	"	68	85	845	
411	150	96	110		New Mi
433	"	85	82		
452	"	48	63	948	
					4th Run
904	150	138	150		
915	"	125	136		
934	"	121	133		
954	"	118	131		
1017	"	114	128		
1034	"	111	125		
1054	"	102	117	425	
1114	"	99	107	475	
1134	"	92	105	525	
103	"	115	129		
115	"	97	109		
128	"	92	105		

365 4th Run continued.

Time	Amp.	Volts	V Open	MAH	
1.45	150	89	103		
2.05	"	88	100	680	
2.25	"	85	99	730	
2.45	"	82	95	780	
3.00	"	79	92	817.	
3.15	"	74	90	855	
3.31	"	69	85	895	
3.43	"	62	80	907.	
3.44	"	88	110		Pour Hg
3.56	"	65	92	965	
4.10	"	45		1000	

Table to make a double

2.85 / 7 = 490 (17)
285
3 99
399

2.33 / 7
6.4
3.5
9.1
39

369 Wt of Coke 2.85 25/1000

Ni in HgO x 6 ——
Pb Comb 4 ——
Mint KOH 75 Ounces.

Time	Amp.	Volts	V Open	MAH	
7.16	150	130	150		1st Run constant Current
7.22	150	73	92		Very poor drop rapidly
7.37	150	71	89		
7.53	150	65	87		
8.20	150	56	84	160	
8.42	125	13			

9.00	150	132	153		2nd Run
9.15	150	93	126		constant Current
9.50	150	67	88		
10.15	150	55	80		
10.40	"	43	65	235	

310 Wt of Cake 6. 105/1000

Refer to #1 Iron 8 — 2 —
Plumbago
Moist N OH 75 Atm.

10 g Fe_2O_3 from oxalate reduced in H for 1¼ hours at 700-800 hours.

Time	Amp.	Volts	Vol. per	Math	
409	150	137	152		1st Run.
430	"	123	137		
458	"	119	132		
515	"	117	131		
530	"	116	130		May 3 1901
548	"	114	125		
602	"	113	128	292	off
645	"	115	135		on
700	"	111	127		
715	"	104	121		
730	"	85	102		
745	"	83	100	442	
800	"	80	97		
815	"	76	96		
826	"	71	91		
835	"	65	86	625	
900	"	48		655	off
141	150	125	150		2nd Run
203	"	113	135		
220	"	109	132		
235	"	108	130		May 4 1901
253	"	106	128		
305	"	104	127		
325	"	103	127		
345	"	101	125		
400	"	99	120		

370

Time	Amp	Volts	Vapen	MAH	
424	150	79	104	407	
427	150	112	123		
454	"	93	106		
509	"	90	104	512	
526	"	87	102		
550	"	80	96	614	
603	"	75	92	647	
616	"	73	90	679	

of the month

114/1000

3

101/1000

371 Mg Coke 5.2

Refin. #3 Iron 8 —
Plumbago 2 —
Moist KOH 75 atm.

Fe_2O_3 in H for 1 hour at 650-750° Black

Time	Amp	Volts	V Open	MAH	
932	150	138	151		1st Run 101/1000
6 '18	"	84	107		
9 08	"	79	103		May 4 1901
9 36	"	28	94		
954	"	16		205	
					2nd Run
151	150	138	152		May 5 1901 Sodder
159	"	119	131		
205	"	100	111		
217	"	92	107		
253	"	76	89	155	
313	"	52			
310	"	22		197.	

N.G.
Cut Out

Fe_2O_3 from oxalate. H in excess for 8 ½ hours.

$\frac{109}{1000}$

372 Wtg Cake 4.2

Regd #4 Iron

Plumbago 8

2

Mount KOH. 175 atm

Time	Amp.	V—	V0	open	MAH
822	150	111	143		
841	"	103	128		
859	"	86	111		
912	"	57		135	

$\frac{102}{1000}$

1st Run May 4 1901

2nd Run May 8 1901 Sat

1122	150	134	150		
1143	"	120	132		
1209	"	117	129		
1238	"	92	108	115	
1350	"	38			

n.g.

Cut Out.

373 Wig Cake 4.7 $\frac{110}{1000}$

Alta. #1A Nickel 6 —
Plumbago 4 —
Mont KOH. 75 atm.
1st 13 W. lot.

Time	Amp.	V	Y open	Matt.	
112	150	135	150		1st Run
127	"	117	131		
147	"	115	127		
204		112	124		
226	"	109	122		
248	"	104	117		May 3 1901
315	"	94	108	307	
332	"	86	105	350	
350	"	33	55	395	
					2nd Run
415	150	136	152		
427	"	120	134		
455	"	116	129		
1017	"	114	127		May 4 1901
1035	"	112	124		
1058	"	109	124		
1113	"	108	123		
1135	"	107	122	315	127/1000
1157	"	100	117	380	
1155	"	45		400	

Double

374 Wt of Cathode 41.7 $\frac{104}{1000}$

Atta #2A nickel 1 at 13 lb. bot. 6 —
Plumbago 4 —
Mount KOH. 75 at Atm.

Time	Amp.	Volts	Vapor	Watt	
0.35	150	136	153		1st Run
1.46	"	121	134		
2.02	"	119	132		
2.28	"	115	129		
2.46	"	117	126		May 3 1901
3.15	"	96	109		
3.40	"	94	108	312.	
3.50	"	93	107	337	
4.17	"	33		405	
9.04	150	136	150		2nd Run
9.29	"	120	139		
9.52	"	116	129		
10.14	"	110	123		May 4 1901.
9.35	"	96	108		
11.00	"	95	105		
11.10	"	86	104		125 $\frac{}{1000}$
12.16	"	39	45	340	

Cut Out.

375 Wt of Cube 6. 103/1000

Refer. #2 Fe. Plum. ? — 2 —

Moist NOH. 75 atm.

Fe_2O_3 in H for 1½ hours at 600-700° + for 10 hours after cooled down

Time	Amp.	Volts	VO/sec	MAH.	
7.37	.150	.137	.151		1st Plum.
7.47	"	.126	.140		
8.01	"	.123	.136		
8.16	"	.122	.134		May 3 + 4 1901
8.38	"	.120	.133		
8.52	"	.119	.132		
9.11	"	.118	.131		
9.35	"	.117	.130		
9.50	"	.116	.129		
10.04	"	.115	.128		
10.21	"	.114	.127		
10.33	"	.113	.126		
10.58	"	.112	.126		
11.20	"	.111	.125		
11.40	"	.109	.124	607.	
12.03	"	.107	.123	665	
12.11	"	.103	.123		
12.32	"	.98	.118	737.	
12.47	"	.88	.110	775	
12.54	"	.83	.103	802.	
1.06	"	.78	.100	807.	To New Mt
1.01	"	.115	.130		
1.05	"	.102	.116		
1.15	"	.99	.112	842	
1.35	"	.98	.111	892	
1.50	"	.96	.110	930	
2.00	"	.95	.109		
2.20	"	.95	.108	1005	
2.35	"	.94	.107		
2.50	"	.93	.106	1080	
3.10	"	.92	.105	1130	
3.25	"	.91	.104		over.

375

1st Run continued

Time	Amp.	Volts	VO	Ques.	MAH.
344	150	90	104	1215	
400	"	88	103	1255	
755	"	116	121		
805	"	109	123	1280	
825	"	103	117	1330	
847	"	93	107	1385	
909	"	85	101	1440	
924	"	81	97	1477	
940	"	77	95	1517	
1000	"	69	88	1567	
1015	"	55	78		
1034	"	23		1652	

115/1000

2nd Run

May 7. 1901

807	150	138	152		
820	"	124	137		
835	"	122	134		
853	"	120	133		
916	"	119	132		
940	"	118	131		
958	"	116	130		
1025	"	110	128		
1044	"	109	124		
1109	"	101	115		
1120	"	95	109		
1126	"	95	108	492.	
1127	"	115	126		
1141	"	101	114		
1152	"	99	112		
1158	"	98	110	575	
100	"	122	135		
120	"	104	116		
135	"	98	110		
155	"	94	106		
220	"	91	104	775	
235	"	89	102		
259	"	87	100	872.	
325	"	82	96		

375

2nd Run Continued.

Time	Amp.	Volt	VO	Ques.	MAH.
344	150	77	92		
358	"	70	87	1020	
400	"	124	114		
419	"	77	92	1067.	
439	"	56	74	1187.	
446	"	30		1135	

3rd Run

May 9 1901

755	150	140	153		
809	"	124	137		
825	"	122	134		
835	"	121	133		
854	"	119	131		
914	"	117	129		
932	"	115	128		
951	"	113	126		
1010	"	111	125		
1031	"	107	122		
1051	"	100	115		
1111	"	93	108		
1132	"	89	104		
1146	"	34		577.	
1205	"	125	138		
111	"	108	120		
124	"	99	111		
143	"	94	104		
208	"	91	104		
227	"	89	103	797.	
251	"	86	100		
314	"	80	95	915	
335	"	75	90		
357	"	59			
404	"	51		1045	

Taken to Make a double

376

107/1000

With batch No 5 Fe 6 —
Plum 4 —
Moist KOH 75 Ata.

Time	Amp	Volts	V Open	Matt.	
1109	100	94	112	-	1st Run
1117	"	87	106		May 4 1901.
1129	"	79	98		
1146	"	57		133	off 112/1000
1156	"	57	-		
120	150	136	157		2nd Run
1245	"	51			May 5. 1901 Sat.
1245	"	37			off

UG
Cut
Out.

377 Mag Carbon 6 —
Rafin Ox 5 Fe
Graphite 2 —
Moist KOH. 75 Ohms.

97/1000
8 —

Time	Amp.	Volts	W/Amp	Watt	
113	150	122	1.45		1st Run
123	"	101	116		N.G.
139	"	88	104		
155	75				
123	150	133	150		2nd Run
1113	"	89	102		
1155	"	19			

May 4 1901
101/1000

May 5 1901

N.G.
Cut Out

378 Wt of Cathode 4.7 — 103/1000

Ni ⊗ Pt 3 Ub. lot. G ____

Graph 4 ____

Mount NGH 75 atm.

Time	Amp.	Volts	V/Amp	MAH.	
110	150	136	167		1st Run
122	"	121	134		
135	"	117	129		
206	"	115	127		
236	"	111	123		
243	"	97	109		
308	"	96	109		
329	"	91	107		
355	"	89	105	407.	142/1000
414	"	33		460	
815	150	131	148		
832	"	117	132		2nd Run
845	"	114	129		May 9 1901
900	"	112	127		
915	"	109	124		
933	"	107	122		
955	"	103	119		
1007	"	100	117		
1031	"	95	113		
1051	"	85	106	390	135/1000
1103	"	50		420	
214	"	140	152		3rd Run May 14 1901
232	"	118	131		
255	"	115	127		
314	"	112	124		
326	"	111	123		
353	"	108	121		Taken to make a triplet
413	"	105	119		
434	"	102	112		
457	"	92	108	407	
544	"	46		475	

379. Cabin No. 7 — 103/1000

Mi #1/2 1st 13 Ur. Gt. — 0

grapes — 2

NOTE. 75 ahead!

Time	Charge	Volts	V0 per	Math.		
8:15	150	134	147		1st Run	May 7. 1901
8:32	"	117	130			
8:54	"	115	128			
9:17	"	113	126			
9:40	"	111	124			
9:56	"	109	122			
10:15	"	98	112			
10:44	"	91	106			
11:15	"	84	105	425		139/1000
11:15	"	38		450	off	
3:16	150	131	146		2nd Run	May 9 1901
3:32	"	122	135			
3:53	"	118	131			
4:20	"	115	129			
4:45	"	113	127			
4:32	"	110	124			
4:55	"	97	109			
10:25	"	91	106			
10:32	"	89	104			
10:52	"	87	103			132/100
11:12	"	81	102	435		
11:19	"	40		452	off	
2:15	150	137	150		3rd Run	May 14 1901
2:34	"	128	131			
2:55	"	114	127			
3:16	"	112	124			
7:20	"	110	123			
7:53	"	108	121			
9:15	"	106	119			
9:35	"	102	116			
9:55	"	93	108			
5	"	85		472		

Tobacco to make a triplet

Time Comp	Pt.	Pt.	No.	Mark	
535	150	26		500	of

380

Cake 4.7

Ni #2 1st 3 Wr. Cot. 6

grof. 4

Moist H_2O. 75 Alum.

109/1000

Time	Amp.	Volts	Open	Mat.		
113	150	135	152		1st Run	
123	"	120	133			
166	"	115	128			
207	"	113	127			
238	"	111	125			
248	"	107	121			
268	"	94	109			
330	"	90	103			
354	"	79	103	402		153/1000
400	"	34	64	417		
472	150	135	153		2nd Run	
510	"	125	138			May 9 1901
533	"	118	132			
555	"	115	128			
595	"	113	126			
1030	"	110	124			
1040	"	107	121			
1013	"	103	118			147/1000
1032	"	95	112			
1052	"	88	106	375		
1112	"	75	104	425		
1116	"	35		435		
2[illegible]	150	135	152		3rd Run	May 19. 1901
[illegible]25	"	118	132			
[illegible]55	"	113	128			
317	"	106	121			
[illegible]27	"	92	107			
[illegible]59	"	92	107			
4[illegible]	"	89	105			Taken to make a triplet
4[illegible]	"	84	103	400		
[illegible]	"	[illegible]		460	46	

95/1000

381 Cake 4.6

Ni #3 1st 13 Ub Batch

Graph

Moist NOH 75 Calm.

Trinny	Amp.	Volts	Opens	Matt.	
					1st Run
115	150	139	154		
124	"	123	136		
117	"	115	125		
2.03	"	113	124		
2.29	"	112	124		
2.59	"	110	123		
3.09	"	107	122		
3.31	"	105	119		
3.45	"	40		375	
					New Ni.
	"	55	132		
3.54	"	42		382	

115/1000

					2nd Run
8.2	150	139	152		
8.33	"	128	140		
8.50	"	120	133		
9.11	"	117	130		
9.34	"	115	128		
9.53	"	112	126		
10.13	"	110	125		
10.33	"	107	123		
10.53	"	99	120	352	
11.09	"	25		415	

May 9 1901

113/1000

Double.

105/1000

382 Cakes 4.7

Ni # 3½ 1st 13 Ur boiled. 6 —

graphite. 4 —

Moist NH_4OH 15% 75 Ohm.

Time	Amp.	Volt.	Vapor	Max.		
8.16	150	135	149		1st Run	May 7 1901.
8.38	"	116	129			
8.55	"	114	127			
9.17	"	112	126			
9.41	"	110	124			
9.59	"	107	122			
10.22	"	91	108	320		150/1000
10.44	"	40		370		

1.03	150	135	150		2nd Run	May 9 1901
1.10	"	123	136			
1.27	"	117	130			
1.42	"	113	127			
2.05	"	108	122			
2.25	"	91	107			150/1000
2.49	"	90	106			
3.12	"	93	110	322		
3.33	"	29		375		

Cut Out.

List to Run.

Fe.	Ni
321'	323 ~~~~
322	324 ~~~~
329'''	325 ~~~~
330''	326 ~~~~
337'	336'
346''	363''
349'	
353	

342
343
344
346

Bet Fe ~~329~~

Notebooks by Edison and Other Experimenters
Group 2: Alloy Books

The six notebooks in this group cover the period April-June 1902. The first book contains notes by William A. Warren regarding the production of alloys for use in various projects, including storage battery electrodes and fluorescent lamps. Near the end of the book are entries pertaining to a coherer transmitter for wireless telephones using carbon granules. The other books contain listings by Edison of the alloys to be fused, along with occasional entries by Warren and Henry S. Harris noting the results.

Only the first book, N-02-04-12, has been selected in its entirety. It contains test results of the alloys listed by Edison in the five other books. In addition, approximately 50 percent of N-02-04-18.2 has been selected to exemplify Edison's involvement in the tests.

N-Number	Label on Front Cover
Selected Books	
02-04-12	"W A Warren Notes"
02-04-18.2	"W A Warren Alloys W Fe Ag"
Books Not Selected	
02-04-15	"W A Warren Alloys Si Co Ni"
02-04-16	---
02-04-17	"Henry S Harris Cr, Cu, Al, alloys"
02-05-12	"W A Warren Alloys Bi Mg Sb Zn"

Notebook, N-02-04-12

N-(02)-04-12

XE-172

W of Warren

Edison Laboratory

grt 12.43

April 12

Set up Wheatstone bridge & D'Arconval galv & measured the res of a number of coils & marked them with their res. Found one coil with Pt core had a short circuit in the core & sent it up to be repaired

April 13

Fixed up two Thompson double coil relative galvanometers one aperiodic + one ballistic ~~[illegible]~~ put in suspension of cocoon fibre + cleaned them up. Pb. all returned O.K.

Mr. Witt + myself put some wire across gals. room to supply current for electric furnace. Had two lamp banks of about 35 amps each to regulate current. Found that current was insufficient + got two ~~[illegible]~~ more.

Then were two furnaces constructed from a vertical furnace with 1/2" carbon + a graphite crucible turned out of a 2 1/2" x 2 1/2" x 2 1/2" cube. I found that with this furnace it was impossible to fuse Ni with any reasonable amount of current as the graphite conducted the heat away very rapidly

April 16. Horizontal furnace
Fire brick + lining for "

The second furnace was a horizontal furnace + with 5½" carbone. The body of the furnace made of two dolomite blocks which cracked all to pieces after the current was on only a very few minutes rendering the furnace useless. Next used a fine brick bottom cut + lined with quick lime ground up + stuck together with dal'ter. The fire brick did not crack at all + the lining stood the heat very well except where it was thin around the edge where it came in contact with the brick + melted down the silica + lime combining + forming an easily fusible glass. The lining of CaO was not all that could be desired it being quite fragile.
Next tried a magnesia brick this cracked some but not so as to render it useless + it conducted heat some more so than the silica brick so that it required some ~~more~~ reconstructing lining.
Tried a lining of calcined $MgCO_3$ with tar which was more tender + scale off.
Tried calcium acetate + lime + also poured acetic acid on the lime this gave a very spongy mass that was much more tender than lime + tar but appeared to be even a better non conductor of heat.

april 16

Started making alloys of Ni + Sb starting with 5% of Sb + increasing it to 45% by amounts of 5% using a total weight of both metals of 20g. weighed to .01 gram

The Ni was melted first + then the Sb added. there was ~~considerable~~ considerable heat produced in all cases by the combination especially around the proportion of Ni 13 to Sb 7

alloys containing over 50% Sb extremely brittle so that they would sometimes break when dropped on the wooden floor

Each alloy in Ni & Sb P.

[illegible] made the pure fine [illegible] the [illegible] [illegible]

Finished Ni Sb alloye at noon + started Ni + Cu + finished 13 of them

April 18

Finished Ni + Cu at 11 00 + started Ni Co + did 16 of them. I thought it unnecessary to weigh the alloye as both metals were not volatile at low wind. Six of the constituents seemed to stick with the lime slightly so the crucible to be replaced after a few pours.

~~Finished Cu + started on Co~~
~~Lost 2 of the six pots~~
~~[illegible] with [illegible] [illegible]~~

April 19

Started on Ni 3 Co 17 This alloy
contained a large percentage
of Co become dull of color
when cooling & rose at
a very high temp, approximately
higher than the melting point
of Ni but the I found that
the freezing point of it was
extremely high it must be
near that of Pt.
Started Ni + Sn about 11.00 A.M.
have a way to weigh for me
who is going slow at it but
suppose he will is supposed
with practice.
Alloys with considerable tin
partly at red heat + not solid
till a very dull red
Alloy with about 25% Sn seems
to feed at is lower than Sn
Finished 17 of the Sn Ni alloys
at 5.15.

April 21

Finished Ni + Sn + started on
Ni + Zn the Zn either flowed
around on top of the Ni
+ oxidized or else into com-
bination with it with a good
deal of energy throwing the
Ni around + volatilizing some
of the Zn
Made three alloys of Ag +
Brass Ag 6 grams Brass 2 g
at 11.37 " 6 " " 4 g
11.77 " 6 " " 6 g
for alloy E.
Found it impractible to make
the alloys of Ni + Zn in furnace
so only made them to Ni 9
Zn 11
The zinc was volatized + burned
to oxide which made a
conducting path from the
electrodes to the magnesia
fire brick which became
conducting around the inner
edge ~~son~~ This conductivity
might be due to some compo
formed by the ~~so~~ MgO or
other constituents of the brick

with the Zn O. same time
The ~~the~~ Zn O + brick combined
we must use 10 or 12 amperes
until the arc in the furnace
was broken.
Spliz tests on Ni + Pb
In morning Mr R. gave me
two note books like this with
lists of ~~of~~ alloys to make.
Did 7 of the Pb Ni alloys

Apr. 22
Started on Ni 12 Pb 8
Weighed out 69.65 grams of
Ag + same of Brass for
Mr Ott.
Finished Ni + Pb at 1 30 +
started Ni + Bi did to Ni 2 Bi

Apr 23

Started on Ni 2 Bi 18 + finished
Ni + Bi (Bay pit sick + wave
home at 8.45
made up some dists of stuff again
for the 150.
Illegible resistance of coils of
a large electro magnet for the
lab.
Started on alloys of Ni + Al
made first alloy Ni 10 Al 10
it was alloy spongy + porous
+ there was some compound
probably a carbide formed
that gave off CaH_2 when
wet.
~~One alloy when wet~~
The substance incrusting
one alloy gave off NH_3
when wet the odor was quite
noticeable + it turned red
litmus paper blue
alloys of more than 50% Al
attack the stirrer so much
that there is very little alloy
left the alloy is surrounded
by a greyish metallic looking
mass ~~which is~~

Apr 24

Sick not at work

Apr 25

Weighed up the rest of the Ni Be alloys + some of Ni Al.
~~Did~~ The Al attached the one so much + gave such poor + uncertain results that I made no further than Ni 8 Al 12. Started on Ni + Si made four + weighed them up + found that only one weighed as much as the Ni put in it

Started on Ni + Ag. Made

Ni	19	17	17.1	5	+	9
Ag	1	2	3	4	15	+ 16

Found that alloy was not ~~homogeneous~~ homogeneous it looked as if the Ni + Ag entirely separated on cooling so did not make any more. The Ag commenced to boil on give off gas soon after melting so there is some Ag spattered out.
Started on Ag + Si. Went best of any alloy yet finished at 6.00

Apr 26

Morning made all Ag Pt alloys
medals went together nicely
but Pt would oxidize of
charcoal was not used.
Used open arc for about
an hour to make some
fineness for the E.
Afternoon started on Cu + Ag
+ finished these went very nicely
used charcoal to prevent oxidation
Started Cu + Al first two went
very nicely after that with
more Al the Al attacked crucible
forming carbide etc + would
not all go in Cu. Will have
to do all Al alloys in some
sort of crucible that you can
use cryolite or some other
suitable flux for Al.
Started Cu Zn made this a
good deal of Zn volatilized

Apr 28

Started ~~Zn~~ Cu 16 Zn 4 had to
use borax as flux + even then
a good deal of Zn was volatilized
Finished Cu + Zn at 2.00 PM +
started W + Ni alloys which
started first + then started
at beginning of series

W	Ni
14	6
10	10
6	14

See notes under W Ni
in other book.

Apr 29

Working on W Ni started
W 13 Ni 7 finished. at 10.00 AM
see note under W & Ni
Tried. W + Bi + W & Sb with
no success. see ~~under~~ note
under W.
Started on W + Cu see under
W.

Apr 30

Finished W + Cu
Started on W + Fe. see under
W.
~~Finished with Al & W alloy, that~~
~~I started at 1 o'clock worked~~
~~on Fe & W.~~

May 1

Changed some of the ~~[illegible]~~ ~~[illegible]~~ ~~[illegible]~~ worms
another furnace this took
all morning
Afternoon Mr. E. used Arc
for flowment expt for an
hour or so.
Then made some alloys of
Ag Cu Cd
Finished all Al W alloys
that I could do
Worked on W+Fe.

May 2

Finished up W + Fe.
Left at noon to go to Poughkeepsie
Doris Ott while I was away
made the following complete
Cu + Sn Cu + S.

May 6

Got back at 1.00
made all W + Co + Cu + Co as
far as Cu II Co 9

May 7

Finished Cu + Co
made Fe Co complete
Roy was busy worst optics so
started out X apparatus + made
diagram of connections.

May 8

Made Cu + Al complete
Made Co 14 Ag 6
" 10 " 10
" 6 " 14

found that they seperated out so did not make any new. Started on Al + Sn. + finished it.

May 9

Made all Co + Sb (+ ~~all Cu + As~~ ~~that~~ + 16 of Cu + As alloys also Ni + As

May 10

Made Fe Ni + Cu P as far as
Cu 10 P 10 + Ni + P as far as
Ni 12 P 8

" 7 " 8
" " "

May 12

Tried Al + Pb would not
go together.
Made Al + Sb as far as
Al 9 Sb 11 when carbon crucible
gave out.
Sb + P as far as Sb 14 Pb
Bi + P " " " Bi 14 P 4
Zn + P — Zn 16 " "

May 13

Tried W + Pb would not alloy.
" W + P heat so great that
at P was volatilized.
Ni + S to Ni 12 58
Also fixed up X ray tubes
& put oil into it.

May 14

Tried Cu + Cd see notes under
Cu + Cd
~~Cd~~ Bi + S
Cr + Ni complete
Mn + Ni " "
Cu + Mn to Cu 8 Mn 12

May 13

Finished Cu + Mn.
Made all Fe + Cu
" four Fe + P
" Two Fe + Bi
" 13 Fe + Sb

May 16

Fe + Sn complete
Fe + Pb 2
Co + Sn. complete
Cu + Bi 8

May 17

Co + P finished 5

Co + S " 5

Fe + S " 9

Al + As 3

May 19

Fe + CR complete

Finished up AL + Sb which I had to leave uncompleted on a ~~Ax~~ ~~Ax~~ of lack of carbon crucibles

AL + Bi 10

AL + AG 14 finished

May 20

Finished Al + Ag
Si + Ag 11 used up all Ag
Fe + ferro manganese 18
Al + Co Complete
In making Al 15 Co 5
there was a compound formed
that resembled graphite but
was too hard to be g.

May 21

Cu + Si 6
Fe + Si 5
Ni + Si
Si + Co
Afternoon worked on
coherer transmitter
May 22 same

So all amount of filings Ag

Size of filings	No coherer	small coherer	large coherer
140-160			
160-180	poor rattle	worse	very poor
180-200	bad rattle	worse fair	very good spark
200	bad rattle	worse fair no ~~si~~	~~[illegible]~~ fair ~~[illegible]~~ very good spark

Medium amount of filings

140-160	poor rattle	worse than	still bad rattle
160-180	worse fair rattle	fair or still ~~n~~	very fair not rattle
180-200	little ~~n~~		
200	~~[illegible]~~		
	quite good rattle	not so good still rattle	fair not rattle

Used a Transmitter consisting
of two plates of Ag on a phosphor
copper diaphragm $\frac{10}{1000}$ thick
Small coherer seems that

~~for~~ static machine was discharging across a spark gap about 0.02 in long which was not connected to other transmitter.
Strong coherer ~~by~~ one side of spark connected to better ground than line & battery.
Found that I got better results with Ag using one cell of Daniell than with more.

May 23
Tried gold plated bryophium powder got no sound except the spark it does not cohere except with a strong spark directly connected to coherer when you can see the spark jumping through the mass it coheres spontaneously.

Examined silver filings under microscope & found that they for the most part consisted of little curls which under the constant vibration of the diaphragm interlocked.
Had some filings by filing some very thin Ag sheets across the edge these were less curly than the others.
all work through 200 meg work about same as ~~as~~
Ag 200 — made ~~in~~ ~~as~~ with file from ~~a~~ solid piece of Ag
After coherer ~~a~~ removed the sound gradually increases.

Size of spring	kind	no cohesion	small cohesion	large cohes	remarks
200 —	~~Ag~~ Ag Chloride	no rattle	very slight rattle	no music only spark	with small cohesion considerable amount same as no cohesion
200 —	Thin sheet Ag	loud rat. good deal rat	not quite so loud about same as rat.	faint rattle water faint	small amount
"	"			no rattle	larger " but yet with large cohesion
~~180-200~~	"				
180-200	"	loud rat.	not quite so loud		
80-140	Zn small amt	no sound	sound in bunches	least get no rattle count in bunches	small amount some sound after tapping strong cohesion
"	" large amt	very faint	loud rattle & sound in bunches	sound loose	strong rattle & sound after ~~tapping~~ strong cohes. (~~cohes~~ after a couple of minutes)
80-140	Cd small amt	no sound	sound in bunches after ~~tapping~~	no sound rattle in bunches	~~rattle~~ after removing cohes gradually ~~rattle~~ more in bunches
"	" large amt	good sound & rattle at first grad. dies out	sound grad. gets louder & suddenly ceases	small cohes apart same as in last cohes	

May 24
Experimented on Zn + Cd in solution trans.
Finished up Bi + Ag
Sb + Ag complete

May 26 Exp. on tel. trans. [illegible]
Rig high voltage [illegible]
[illegible]
May 27 [illegible]
[illegible]

May 28 Went to Alg. to see about [illegible]
[illegible]
[illegible]

May 29 Worked on [illegible]
[illegible]
[illegible]

Experiment 2 period of coke 150-170

[illegible]

1 [illegible] of diaphram upward + make lower contact bet. particles [illegible] of coke + added powd. graphite + anthracite latter to reduce.

[illegible]

[ITEM FOUND IN BOOK]

3 aq 1 Brass
3 aq 2 "
3 aq 3 "

6 aq 2 [illegible]
6 aq 4 [illegible]
6 aq 6 [illegible]

Notebook, N-02-04-18.2

X E-172 N-02-04-18.1

35
13
105
35
455 20
91 00

13
20
260

Aluminum ✓
Boron
Silicon ✓
Cobalt ✓
Nickel ✓
Magnesium ✓
Antimony ✓
Bismuth ✓
Chromium ✓
Lead
Iron ✓
Zinc ✓
Cadmium
Manganese
Copper ✓
Tin
Phosphorous
Sulphur
Molybdenum
Sodium
Tellurium
tungsten ✓

Selenium
Uranium
Thorium
Zirconium
Cerium
Titanium
Lithium
Arsenic
Silver ✓
Niobium
Vanadium
Didymium
Tantalum
Yttrium

April 18 1902 X

Alloys for Thermo & other experiments

Tungsten	Aluminium	
19	1	
18	2	
17	3	
16	4	
15	5	
14	6	
13	7	
12	8	
11	9	
10	10 —	
9	11 —	
8	12 —	
7	13 —	
6	14 —	
5	15 —	
4	16 —	1726
3	17 —	1866
2	18 —	1934
1	19 —	1938

Apr 30 tried W10 Al10 used crystite as a flux for Al. used a high heat. On opening cone found only a black mass with bright yellow crystals.

centered through it removed some of the crystals.
Fused same alloy again ~~but not yet as~~ with less heat. The alloy produced was not homogeneous so will ~~not~~ make ~~only~~ those with more Al than 50%

Tungsten	Boron
19	1
18	2
17	3
16	4
15	5
14	6
13	7
12	8
11	9
10	10
9	11
8	12
7	13
6	14
5	15
4	16
3	17
2	18
1	19

Tungsten	Silicon
19	1
18	2
17	3
16	4
15	5
14	6
13	7
12	8
11	9
10	10
9	11
8	12
7	13
6	14
5	15
4	16
3	17
2	18
1	19

May 6

Tungsten	Cobalt
19	1
18	2
17	3
16	4
15	5
14	6
13	7
12	8
11	9
10	10
9	11
8	12
7	13
6	14
5	15
4	16
3	17
2	18
1	19

Complete. May 6

Started Apr 28. Finished Apr 29 1800
Walley AM

Tungsten,	Nickel	
19	1	14.78
18	2	15.5
17	3	17.98
16	4	16.81
15	5	17.69
14	6	18.45
13	7	18.74
12	8	18.71
11	9	18.70
10	10	18.13
9	11	18.85
8	12	18.69
7	13	18.98
6	14	19.53
5	15	19.65
4	16	19.20
3	17	19.38
2	18	19.79
1	19	19.8

Made W14 Ni 1 W10 Ni 10 + W6 Ni 14
first then started a beginning
of series
It was impossible to pass the
first two alloys of the series
you could see the Ni melt
+ be absorbed by the W. By
using about 95 amperes for
OVER

[9]

about five minutes the
W would become a thick pasty
mass but not a clear regulus
although the time of the cru
ble was softened so much that
it was found to be chagrinlin
on cooling
Alloys containing 30 % + over of
Ni melt much more easily
+ completely + make nice
buttons

Tungsten	Magnesium
19	1
18	2
17	3
16	4
15	5
14	6
13	7
12	8
11	9
10	10
9	11
8	12
7	13
6	14
5	15
4	16
3	17
2	18
1	19

apr 29 *

Tungsten	Antimony
19	1
18	2
17	3
16	4
15	5
14	6
13	7
12	8
11	9
10	10 —
9	11
8	12
7	13
6	14
5	15
4	16
3	17
2	18
1	19

∴ Sb is all volatilized out
same as Bi

Started Apr 29 10.00 AM.

Tungsten	Bismuth
19	1
18	2 —
17	3
16	4
15	5
14	6 —
13	7
12	8
11	9
10	10 —
9	11
8	12
7	13
6	14 —
5	15
4	16
3	17
2	18
1	19

It is impossible to completely fuse the W it only gets slightly pasty + sticks together nicely when the Bi is thrown. the heat is sufficient to completely volatilize it when less than ~~half~~ 10 g of Bi are used when more than this amount of Bi is used some remains

but it does not appear to have combined with the W at all

[16]

May 13 *

Tungsten	Lead
19	1
18	2
17	3
16	4
15	5 —
14	6 —
13	7
12	8
11	9
10	10 —
9	11
8	12
7	13
6	14
5	15
4	16
3	17
2	18
1	19

The Pb above not seem to alloy with the W. The W does not melt in the furnace it remains as a porous mass which simply sticks up the Pb noticed this in W 10 Pb 10 where the W sticked up 4 g. of P + the remainder of the Pb was

1

left in globules sticking to it
when I squeezed the bulb with
the pincers more lead came
out of it in globules

Tungsten	Zinc
19	1
18	2
17	3
16	4
15	5
14	6
13	7
12	8
11	9
10	10
9	11
8	12
7	13
6	14
5	15
4	16
3	17
2	18
1	19

Tungsten 19 Cadmium.

Tungsten.	Manganese
19	1
18	2
17	3
16	4
15	5
14	6
13	7
12	8
11	9
10	10
9	11
8	12
7	13
6	14
5	15
4	16
3	17
2	18
1	19

Apr 29 Finished Apr 30 11 to 1 PM

Tungsten	Copper	
19	1	15.7
18	2	
17	3	
16	4	17.61
15	5	18.58
14	6	18.3
13	7	17.[illegible]
12	8	15.75
11	9	16.05
10	10	16.93
9	11	17.99
8	12	17.[illegible]
7	13	17.65
6	14	19.24
5	15	17.0[illegible]
4	16	[illegible]
3	17	18.63
2	18	18.68
1	19	

alloys with less than about 5% Cu do not seem to be homogeneous there appears to be an alloy in the centre surrounded by unalloyed W. ~~[illegible]~~ probably due to incomplete fusion I am making alloy W10Cu10

I noticed that the ice melted + became very fluid. It then commenced to combine with the W + became thicker + thicker as it took up more W + could not be brought again into a fluid state even with prolonged heating with 90 amperes.

Jupiter,	Jim
19	1
18	2
17	3
16	4
15	5
14	6
13	7
12	8
11	9
10	10
9	11
8	12
7	13
6	14
5	15
4	16
3	17
2	18
1	19

May 13

Tungsten	Phosphorous
19	1
18	2
17	3
16	4
15	5
14	6
13	7
12	8
11	9
10	10
9	11
8	12
7	13
6	14
5	15
4	16
3	17
2	18
1	19

Tungsten	Sulphur
19	1
18	2
17	3
16	4
15	5
14	6
13	7
12	8
11	9
10	10
9	11
8	12
7	13
6	14
5	15
4	16
3	17
2	18
1	19

Tungsten 19	Molybdenum 1
18	2
17	3
16	4
15	5
14	6
13	7
12	8
11	9
10	10
9	11
8	12
7	13
6	14
5	15
4	16
3	17
2	18
1	19

Tungsten	Chromium
19	1
18	2
17	3
16	4
15	5
14	6
13	7
12	8
11	9
10	10
9	11
8	12
7	13
6	14
5	15
4	16
3	17
2	18
1	19

Tungsten	Sodium
19	1
18	2
17	3
16	4
15	5
14	6
13	7
12	8
11	9
10	10
9	11
8	12
7	13
6	14
5	15
4	16
3	17
2	18
1	19

Tungsten	Tellurium
19	1
18	2
17	3
16	4
15	5
14	6
13	7
12	8
11	9
10	10
9	11
8	12
7	13
6	14
5	15
4	16
3	17
2	18
1	19

Tungsten	Selenium
19	1
18	2
17	3
16	4
15	5
14	6
13	7
12	8
11	9
10	10
9	11
8	12
7	13
6	14
5	15
4	16
3	17
2	18
1	19

Tungsten	Uranium
19	1
18	2
17	3
16	4
15	5
14	6
13	7
12	8
11	9
10	10
9	11
8	12
7	13
6	14
5	15
4	16
3	17
2	18
1	19

Tungsten	Thorium
19	1
18	2
17	3
16	4
15	5
14	6
13	7
12	8
11	9
10	10
9	11
8	12
7	13
6	14
5	15
4	16
3	17
2	18
1	19

Tungsten	Zirconium
19	1
18	2
17	3
16	4
15	5
14	6
13	7
12	8
11	9
10	10
9	11
8	12
7	13
6	14
5	15
4	16
3	17
2	18
1	19

Tungsten	Cerium
19	1
18	2
17	3
16	4
15	5
14	6
13	7
12	8
11	9
10	10
9	11
8	12
7	13
6	14
5	15
4	16
3	17
2	18
1	19

Tungsten	Titanium
19	1
18	2
17	3
16	4
15	5
14	6
13	7
12	8
11	9
10	10
9	11
8	12
7	13
6	14
5	15
4	16
3	17
2	18
1	19

Tungsten	Lithium
19	1
18	2
17	3
16	4
15	5
14	6
13	7
12	8
11	9
10	10
9	11
8	12
7	13
6	14
5	15
4	16
3	17
2	18
1	19

Tungsten	Arsenic
19	1
18	2
17	3
16	4
15	5
14	6
13	7
12	8
11	9
10	10
9	11
8	12
7	13
6	14
5	15
4	16
3	17
2	18
1	19

Jumpolan	Silver
19	1
18	2
17	3
16	4
15	5
14	6
13	7
12	8
11	9
10	10
9	11
8	12
7	13
6	14
5	15
4	16
3	17
2	18
1	19

Apr 30

Tungsten	Iron
19	1
18	2
17	3
16	4
15	5 —
14	6 —
13	7 —
12	8 —
11	9 —
10	10 —
9	11 —
8	12 —
7	13 —
6	14 —
5	15 —
4	16 —
3	17 —
2	18 —
1	19 —

Started on W10 Fe10 Fe fused OK but W did not it seemed to form a pasty mass with Fe + the alloy required ~~more~~ considerable ~~time~~ heating before it appeared to be homogenious in the furnace. Next made W6 Fe14 this fused more easily

but made a more porous button perhaps because I added in powdered coke ~~w~~ ~~d~~ throwing the coke on the W10 Fe10 alloy caused quite a vigorous reaction which threw some of the alloy out of the furnace so did not use it in ~~[illegible]~~ W6 Fe14

Tungsten	Niobium
19	1
18	2
17	3
16	4
15	5
14	6
13	7
12	8
11	9
10	10
9	11
8	12
7	13
6	14
5	15
4	16
3	17
2	18
1	19

Tungsten	Vanadium
19	1
18	2
17	3
16	4
15	5
14	6
13	7
12	8
11	9
10	10
9	11
8	12
7	13
6	14
5	15
4	16
3	17
2	18
1	19

Tungsten	Ordinyium
19	1
18	2
17	3
16	4
15	5
14	6
13	7
12	8
11	9
10	10
9	11
8	12
7	13
6	14
5	15
4	16
3	17
2	18
1	19

Tungsten	Tantalum
19	1
18	2
17	3
16	4
15	5
14	6
13	7
12	8
11	9
10	10
9	11
8	12
7	13
6	14
5	15
4	16
3	17
2	18
1	19

Tungsten	Yttrium
19	1
18	2
17	3
16	4
15	5
14	6
13	7
12	8
11	9
10	10
9	11
8	12
7	13
6	14
5	15
4	16
3	17
2	18
1	19

Notebooks by Edison and Other Experimenters
Group 3: Battery Endurance Book No. 1 and Work Books, Nos. 1-10

The ten extant notebooks in this group (Work Book 4 has not been located) cover the period November 1904–December 1906. They consist of an Endurance Book and nine Work Books, which describe the performance and characteristics of experimental storage batteries. The first book, entitled "Endurance Book #1," was used by Edison and later by Walter E. Holland to rate the endurance of groups of cells. Included are tabulated ratings of the performance of some of the cells numbered from 4060 through 9343. Separately tabulated measurements give caliper readings before and after the tests, which possibly refer to the swelling of pockets in the electrodes of the "E" type batteries. The inside front cover contains an "Index to Section I and II," listing the order of entries in the book. Two indexes in the middle of the book provide a partial description of the experimental characteristics of each group of cells.

Although the individual entries in the Work Books are less detailed than those in the Endurance Book, the books in this set contain records of endurance tests for all cells numbered from 4000 through 13127. Most of the entries in Books 1-5 are by Edison. The succeeding books show a steady decline in entries by Edison, and the last book contains only entries by Walter E. Holland and by other unidentified experimenters. At the beginning of the first Work Book is the following notation by Edison: "New experiments started at Laboratory in our new test room to discover why nickel elements in some cases lose their amp capacity after being in use and also to discover a remedy that is practical and commercial."

The Endurance Book and Work Books 1-6 have been selected. Those books reflect Edison's initial involvement and his gradually declining participation in the tests.

Book #	N-Number	Label on Front Cover
		[additional information supplied by the editors appears in brackets]

Selected Books

--	Undated.16	"Endurance. Book #1"
1	04-11-02	"[B]ook 1 4000 to 44[18]"
2	04-11-22	"Work Book No. 2 4419 To 5131"
3	04-12-14	[cover missing]
[4]	---	[missing]
5	05-01-17.1	[cover missing]
6	05-01-31	"7882- Book 6"

Books Not Selected

7	05-03-02.1	"Battery Not very Important"; "Work Book #7 8732-9497"
8	05-05-03	"Work Book No 8 May 3 1905 9498 to 10748"
9	05-08-15.1	"Work Book #9 10749 to 12011"
10	06-03-27	"Work Book #10 12012 to 13127"

Notebook, N-Undated.16

INDEX TO SECTION I AND II

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5324-32

MASTER MICROFILM
PRODUCED BY
PRESERVATION
PRESERVATION
PRESERVATION
PRESERVATION

00-00-00.16

Note

Endurance cells selected from Work book #1 follows after endurance cells group #4909-07

Calipers

	Original	After 1st Run	Before Endurance	After Endurance
4421	93-103-103	102-107	102-106	
20	88-100-100	97-102	100-102	
19	92-100-103	101-105	103-102	

Section I

4421
4420 } Group 5 Ni Recessed Pots Chg'd in 33%
4419 } 1150 Fahr. 15 H. against CP Ni 5[illegible] 100 rate

Then in 21% + chg 15 H 200 dis 100 use new irons
Cathoded –

4421	615	479	537	460	530	582	530	531	538
20	620	474	513	457	533	537	520	526	582
19	612	467	529	453	524	532	521	523	530

Endurance

	62	64	65	116	117	168	169	220	221
4421	530	522	518	538	500	467	453	410	407
20	533	508	515	525	488	465	455	417	468
19	533	512	517	517	493	460	452	416	402

	272	273	324	325	476	477	528	529		580
4421	386	361	322	319	180	169	147	142	Broke in 476	144
20	395	377	340	324	222	213	163	187		143
19	390	367	345	340	183	171	150	137		100

	63								
4421	100								
20	107								
19	95								

Calipers

	Original	After 1st Run	Before Endurance	After Endurance
4426	92-102-103	100-104	101-103	
25	92-101-103	100-104	105-104	
24	92-101-103	99-105	103-103	

Section I

4426 Group 5 m. Pulsed perfs chg 21%
4425 15 h 100 rate Temp 150 f. Then chg 21%
4424 Coil 15 h dischg 100 use new cathodes now

	1	2	3	4	5	6	7	8	9		
4426	583	461	520	442	518	522	517	517	520		
25	578	443	520	440	518	523	504	517	517		
24	587	460	530	455	527	532	521	518	523		

Endurance

	0	63	64	116	117	168	169	220	221		
4426	530	500	483	517	483	465	452	432	412		
25	543	504	500	522	487	467	452	400	400		
24	543	512	497	533	498	477	457	432	412		

	272	273	324	325	476	477	528	529			680
4426	412	393	392	377	241	217	215	212	Pulsed 15 m.		190
25	393	375	342	343	217	200	217	217	Pulsed 15 m.		182
24	407	383	351	357	217	200	163	167			103

	681									
4426	197									
25	190									
24	117									

Calipers

	Original	After 1st Run	Before Endurance	After Endurance
4461	87-98-99	103-103	105-104	
59	91-100-104	106-107	109-107	
58	88-100-99	105-105	109-105	

Section I

4461. 5 Req Ni Chg'd 15 h 33% 150 Fahr
4459. 100 rote KOH Containing 3 grammes of
4458. Metallic Aluminum Then put in 21% +
Chg 200 rote 15 h dis 100

4461	292	357	271	373	377	382	373	378
59	305	63	306	417	425	429	425	428
58	315	400	316	416	419	427	421	418

Endurance

	60	62	63	115	116	167	168	219	220
4461	377	367	367	355	333	300	303	233	242
59	SC	SC	432	448	430	370	363	347	SC
58	433	432	432	391	395	333	338	277	280

	271	272	323	324	475	476	577	578			679
4461	233	233	167	SC	94	83	73	95	Reading	Not Read	77
59	340	337	273	289	163	145	123	133			103
58	272	271	233	208	123	110	87	107			90

	680									
4461	87									
59	119									
58	113									

Calipers

	Original	After 1st Run	Before Endurance	After Endurance
4465	94-99-101	92-98	96-97	
64	91-95-104	100-108		
63	89-97-104	97-103		

Section I

4465 5 Ni put in 21/p + chg 200 rate 15 h.
64 disch 100 KOH. Containing 3 grams
63 Cyanide Potassium – Rzg indus to be changed
24 hours at 200 before putting in cell with Nickel,

4465	37	493	537	513	532	525	507	505	493
64	0	550	565	540	527	400	533	527	550
63	33	508	545	518	540	532	543	532	510

513	538	518	522	523	532
528	523	512	519	515	527
528	545	532	530	SC	530

Endurance

	67	69	70	122	128	174	175	226	227
4465	567	533	540	563	540	518	520	487	497
64	578	540	533	586	528	517	508	486	SC
63	SC	600	555	572	548	517	523	498	493

	278	279	330	331	482	483	584	585	686
4465	478	477	455	467	394	387	348	300	223
64	487	SC	455	463	SC	374	348	SC	347
63	500	490	467	473	400	393	343	345	231

Fresh 7 hr KOH

	687
4465	227
64	305
63	298

Calipers

	Original	After 1st Run	Before Endurance	After Endurance
4470	93-103-103	102-105	106-106	
69	92-101-104	100-108	105-103	
68	87-97-100	95-102	100-104	

Section I

4470 | 5 Ni put in 21/1 Chg 200 dis 100 15 h
69 | KOH Containing 3 grms Hyposulphite Soda
68 | Reg runs to 62 chgd 24 hours before putting in cell with Ni

4470	442	515	553	518	525	517	533	512	527	517
69	420	513	533	510	X	X	SC	SC	SC	SC
68	436	503	525	507	513	502	533	507	522	517

516	527	518
SC	502	514
508	525	517

Endurance

	65	67	68	120	121	172	173	224	225
4470	582	533	528	547	523	540	500	478	467
69	533	523	523	553	523	515	500	490	475
68	565	533	523	553	S.C.	527	523	475	495

	276	277	328	329	480	481	582	583		684
4470	475	456	442	452	360	232	241	253	Analysis of Mop Wash	267
69	490	472	465	475	412	293	338	350		322
68	456	487	407	458	327	307	223	230		243

	685
4470	250
69	307
68	243

Caliper

	Original	After 1st Run	Before Endurance	After Endurance
4482	90 - 99 - 101		103 - 104	
81	91 - 97 - 100		103 - 106	
80	88 - 100 - 102		102 - 102	

Section I

4482	5 Ni. chgd 200 rate 15 hr dis 100 in 21%
81	which has been boiled with filter paper
80	run to 62 chgd 24 hours before ni put with it

4482	442	532	533	527	527	511	512	513	497	513	500
81	432	508	532	517	513	510	512	511	500	512	505
80	447	507	528	510	517	497	506	500	493	495	497

Endurance

	63	65	66	118	119	120	121	222	223
4482	565	533	527	558	547	G.C.	477	478	483
81	575	515	527	565	523	528	510	485	480
80	555	530	520	545	516	500	495	467	465

	274	275	326	327	478	479	580	581		693
4482	467	456	447	448	387	370	333	337	Run 2	337
81	489	467	457	467	389	371	347	357	Run 2	354
80	465	452	439	448	377	355	334	333	Run 2	193

	693									
4482	345									
81	378									
80	138									

Caliper

	Original	after 1st Run	Before Endurance	after Endurance
4485	89-100-104		106-105	
84	90-100-103		109-106	
83	89-100-102		112-108	

Section I

4485 Dup of 4482 next page back Except
84 KOH has in addition 2 grams freshly
" 83 precip Mercuric Oxide put in -

4485	448	463	530	512	523	510	510	507	492	498	495
84	456	520	530	515	522	510	512	510	497	502	503
83	457	512	530	514	522	510	513	510	497	497	498

Endurance

	63	65	66	118	119	170	171	222	223
4485	567	533	525	557	527	515	500	475	467
84	573	530	502	568	527	535	510	498	497
83	567	535	523	597	515	500	492	462	464

	274	275	326	327	478	479	580	581	
4485	473	455	442	452	380	360	344	345	Run 2 hrs
84	500	476	467	480	412	392	370	390	KOH Vol.
83	463	451	433	440	371	344	317	317	

	682	683							
4485	250	263							
84	346	325							
83	260	263							

Calipers

	Original	after 1st Run	Before Endurance	After Endurance
4523	90-95-102	97-96	103-100	
22	92-102-104	98-100	102-103	
21	89-100-103	97-104	103-105	

	665	666					
4523	264	277					
22	205	200					
21	303	272					

Section I

4523	5 ni Cupolated with Iron (thirty)
22	Chg 21% 15 h 200 dis 100
21	

	1	2	3	4	5	6	7	8	
4523	500	508	494	488	495	487	485	470	481
22	500	506	495	490	493	487	483	487	475
21	495	506	495	490	492	488	486	487	477

	475	488	7	482	484
	467	488	483	484	484
	467	488	483	483	484

Endurance

	65	67	68	121	122	173	174	225	226
4523	533	515	498	528	484	483	458	443	433
22	525	500	498	520	477	480	451	433	412
21	520	500	498	523	481	483	455	433	430

	277	278	329	330	481	482	583	584
4523	458	438	420	430	339	315	245	245
22	447	417	405	400	287	249	180	177
21	452	427	410	408	312	284	215	213

Caliper

	Original	after 1st. Run	Before Endurance	after Endurance
4526	90 - 101-103	98-103	102-104	
25	90-102-103	99-102	101-104	
24	89-102-102	97-103	103-104	

Section I

4526	5 ni cups plated very thin with Silver
25	21% clg 15 h 200 clr 100
24	

4526	512	524	524	527	508	525	510	507	491	493	500
25	173	516	525	527	512	532	516	508	488	500	500
24	521	524	506	527	500	525	512	507	500	497	501

Endurance

	63	65	66	118	119	170	171	222	223
4526	533	515	500	500	500	493	492	465	460
25	575	527	522	552	510	510	492	477	467
24	545	527	497	548	507	505	492	475	463

	274	275	326	327	478	479	580	581		682
4526	453	437	430	433	354	337	302	310	[illegible]	222
25	472	450	447	440	354	339	287	290	[illegible]	238
24	467	452	447	447	350	359	345	345	[illegible]	264

	683								
4526	225								
25	233								
24	258								

Caliper

	Original	After 1st Run	Before Endurance	After Endurance
4531	95-100-105	100-107	105-109	—
30	91-102-103	98-103	105-106	
29	93-105-107	101-106	105-107	

Section I

4531
30
29

5 ni cupo plated very thin with Cadmium 21% chg 15h 200 dis 100

4531	587	508	514	527	512	532	517	511	487	498	500
30	510	506	525	518	509	528	517	503	490	500	501
29	507	509	525	531	518	533	513	517	500	510	512

Endurance

	63	65	66	118	119	170	171	222	223
4531	567	520	520	543	510	490	483	467	460
30	545	528	508	545	510	508	490	475	463
29	580	533	525	570	528	518	508	487	470

	274	275	326	327	478	479	580	581		682
4531	457	443	432	433	371	355	321	323	Tracks 3 in 4	264
30	477	444	441	441	367	348	322	327	1 in 4	283
29	478	462	457	463	384	367	333	333		278

	663
4531	257
30	272
29	267

Caliper

	Original	After 1st. Run	Before Endurance	After Endurance
4536	89-102-102	97-104	103-104	—
35	88-100-104	96-102	103-102	
34	90-100-103	98-101	103-103	

Section I

4536 5 ni cups plated very thin
35 with Copper. 21% Chg 15h 200
34 cha 100

4536	490	508	510	522	502	520	517	503	489
35	499	505	512	522	502	513	516	503	490
34	497	505	513	520	502	515	516	504	488

	516	495	500	500					
	518	493	498	501					
	517	490	494	500					

Endurance

	65	67	68	120	121	122	123	224	225
4536	553	520	520	537	505	497	483	478	467
35	560	532	518	558	519	512	493	480	467
34	542	529	520	542	506	493	483	467	462

	276	277	328	329	480	481	582	583		684
4536	459	446	427	425	219	267	262	275	Tech. Info. 1604 April	226
35	472	450	440	446	358	342	297	247		228
34	451	439	423	423	329	315	218	232		197

	685								
4536	229								
35	233								
34	193								

Caliper

	Original	After 1st Run	Before Endurance	After Endurance
4596	90-99-99	94-98	104-105	
95	91-101-103	100-110	100-106	
94	87-97-100	94-98	96-100	

Section I

4596 5 Rzq Ni assembled with Fe packets
95 having no Mercury in the black ring
94 Chg 15 h 200 dis 100 21% Chg Fe 15 h
200 rate before assembling with Ni

4596	488	493	471	490	490	489	497	493	480
95	480	486	474	500	496	500	510	500	475
94	497	473	476	493	492	497	500	497	475

4596	458	473	466	479
95	505	487	482	491
94	505	467	478	486

Endurance

	65	67	64	120	121	122	123	324	225
4596	542	500	500	537	483	492	458	452	433
95	558	530	532	553	504	492	477	471	454
94	550	517	500	547	493	490	467	462	439

	276	277	328	329	480	481	682	583			684
4596	432	406	380	392	300	300	165	167	Fault 7/7	Fault 7/7	167
95	455	432	407	397	283	267	167	178			220
94	462	418	397	379	309	298	207	200			195

	685
4596	170
95	216
94	197

Calipers

	original	after 1st Run	Before Endurance	After Endurance
4603	91-102-107	97-103	101-104	
02	86-99-101	93-100	98-100	
01	90-99-102	98-100	100-101	

Section F

4603 5 hr Chg 33% 150 Talw 100 rate 15 h
02 assembled black iron No Mercury which
01 been previously changed 15 h 200 rate
Then recha 15 h 200 dis 100 21%

4603	553	490	497	488	465	466	452	455	467	450	453	455
02	638	575	561	550	555	533	540	537	533	535	540	545
01	651	580	565	543	547	529	528	530	525	530	532	533

Endurance

	65	67	68	119	120	171	172	223	224
4603	488	450	434	486	467	492	467	465	461
02	617	543	532	553	532	527	512	506	488
01	565	543	522	498	525	527	507	498	492

	275	276	327	328	379	430	581	582			633
4603	473	448	425	417	409	383	333	297	Failed		293
02	490	456	433	424	410	389	325	367	Failed		313
01	487	463	432	433	400	377	330	298	Failed		248

	694									
4603	263									
02	316									
01	256									

Calipers

	Original	After 1st Run	Before Endurance
4627	90-105-104	98-104	105-104
26	90-102-103	101-104	104-105
25	95-105-112	101-106	104-111

Section I

4627 5 Ni Reg Fe run in 5% KOH 15%
26 Carbonate Potash
25 Chg 15 h 200 dis 100

4627	475	497	397	400	412	415	387	396	333	365	380	387	380	382
26	477	498	430	437	449	450	435	442	442	465	450	444	410	425
24	472	495	373	380	398	400	378	395	392	367	392	390	395	398

Endurance

	67	69	70	121	122	173	174	225	226
4627	328	352	323	237	233	220	237	176	177
26	417	433	408	300	325	292	313	228	233
24	357	380	352	267	263	292	288	217	212

	277	278	329	330	481	482	583	584		685
4627	113	123	91	91	45	43	62	60	Burned off	60
26	133	130	88	84	47	47	0	3	Burned off	25
24	167	167	120	122	55	52	40	40		43

	686
4627	68
26	37
24	43

Calipers

	Original	After 1st Run	Before Endurance
4633	93-104-105	101-105	109-108
32	99-101-103	99-105	107-108
31	91-101-102	100-105	104-105

Section I

4633	5 m. Reg Fe run in 10% KOH. 10%
32	Carbonate Potash.
31	Chg 15 h 200 dis 100

4633	478	502	483	490	493	500	492	500	498	488	500	495	467	497
32	479	464	481	484	512	497	485	489	487	470	495	487	473	475
31	475	497	482	488	493	487	485	495	487	465	442	487	467	472

Endurance

	69	69	70	121	122	173	174	225	226
4633	545	504	500	500	500	520	500	500	483
32	533	510	493	508	487	497	477	478	467
31	532	515	493	518	498	520	487	497	480

	277	278	329	330	481	482	583	584		685
4633	492	453	427	421	309	300	143	110	Indicates 5% KOH fed in	90
32	463	442	400	S.C.	190	174	67	63		49
31	482	457	427	427	216	192	88	83		35

	686
4633	110
32	67
31	50

Calipers

	original	after 1st Run	Before Endurance	After Endurance
4638	91-102-103	104-108	109-109	
36	92-101-102	101-107	110-109	
34	98-102-109	99-102	107-110	

Section I

4638 | 5 M Reg fe: run in 15% KOH, 5% Carbonate
36 | ~~KOH~~ Potash – chg 15 h 200 dis 100
34

4638	515	507	500	519	513	521	527	510	515	518	513	520	502
36	457	493	488	506	490	507	513	500	522	493	497	500	490
34	478	503	497	512	507	515	527	511	533	519	512	512	505

Endurance

	66	68	69	120	121	122	173	224	225
4638	554	500	493	467	467	467	458	433	425
36	550	487	478	458	457	444	434	387	387
34	565	509	500	482	498	475	461	438	431

	276	277	328	379	460	481	582	583			684
4638	417	403	355	367	345	320	312	300	215		253
36	377	366	292	293	267	253	192	185	Probably 4638		105
34	420	407	341	367	346	325	283	272			260

	685									
4638	267									
36	125									
34	264									

Calipers

	Original	after 1st Run	Before Endurance
4664	90-99-103	105-101	107-105
61	91-101-102	102-103	101-103
60	91-98-101	100-101	104-104

Section F

4664 | 5 Mi Reg. mix dipped 3 minutes in qux
61 | Sulphate Nickel Solution, dried on plate.
60 | Then put soak 120 hours in 33% down
stairs in bottle Then assemble & put in
21% Chg 15 h 200 dis 100

4664	442	493	524	518	525	525	526	507	512	515
61	445	491	521	527	529	529	524	507	508	512
60	440	498	523	527	515	522	522	510	516	517

Endurance

	63	65	66	117	118	169	170	221	222
4664	567	533	500	533	523	532	493	491	470
61	560	542	526	510	530	541	508	500	482
60	538	527	510	467	523	527	500	500	482

	273	274	325	326	377	378	379	380		651
4664	447	438	406	393	329	284	210	200	Pulsating 100%	198
61	443	444	417	407	343	313	233	223		173
60	486	459	431	421	343	320	233	223		162

	652								
4664	200								
61	185								
60	171								

Calipers

	Original	after 1st Run	Before Endurance	
4668	92-100-104			
67	93-102-106			
66	89-100-101			
65	93-104-104			

Section I

4668	5 M with 4g in bottom saturated Zinc
67	1/16 Hack. chg 200 15 h dis 100 21/0
66	
65	

4668	470	522	500	500	497	475	492	503	
67	470	513	495	492	490	467	473	495	
66	467	508	490	493	497	467	488	500	
65	428	518	471	493	473	488	465	503	

Endurance

	61	63	64	115	116	167	168	219	220
4668		452	460	367	442	408	434	405	432
67	493	452	445	368	433	377	401	313	310
66	505	483	515	407	467	415	438	373	388
65	498	498	463	400	450	400	428	395	409

	278	272	323	324	474	475	576	577		
4668	392	412	173	263	0	29	2	10	Sw	in
67	242	205	5.C.	0	0	0	6	3	over	mus
66	297	233	171	108	76	65	32	47	[illegible]	[illegible]
65	372	280	233	233	67	65	17	16	RON.	

	678	679	680	681	682	683				
4668	113	S.C.	262	330	207	255				
67	83	117	130	263	213	258				
66	15	93	227	323	238	325				
65	38	123	197	310	208	263				

Calipers

	By Calipers Original	after 1st Run	Before Endurance
4687	90-100-101		104-101
81	92-100-103		101-104
80	92-102-103		100-104

Section I

4682 | 5 m. Reg mx. dipped 3 minutes in
81 | Ammonia solution containing Chloride
80 | Ammonia in which Ni hydroxide is dissolved - dried on plate soaked 156 hours in 33% down stairs 21% assembled rzg Fe chg 15h. 200 dis. 106

	1	2	3	4	5	6	7	8	9	10
4682	470	500	513	548	565	547	530	537		
81	487	508	519	552	533	548	532	546		
80	466	500	513	540	540	542	530	538		

Endurance

	63	65	66	117	118	169	170	221	222
4682	598	547	532	542	530	540	512	500	488
81	603	588	533	555	533	538	513	500	494
80	593	547	533	553	537	543	520	510	497

	273	274	325	326	477	478	529	530		681
682	481	460	433	423	397	367	333	320	Tabs 3 in 1	278
81	484	465	433	432	389	362	293	263	Tabs 3 in 1	252
80	494	474	447	447	428	400	373	367		323

	682									
682	267									
81	237									
80	337									

Calipers

	Original	after 1st Run	Before Endurance
4700	91-101-101	99-102	102-104
4699	90-102-100	98-103	101-105
98	92-101-102	101-105	104-106

Section I

4700 5 Rag. N. 10 old mons Chg the 5 24 in
4699 33% as anode & 10 mons as Cathode
98 15 h 100 rate 150 Fahr Goth in same
dish then assemble in Cells 21%
Chg 15 h 200 dis 100

4700	547	540	528	530	537	516	517	517	
4699	576	543	532	520	532	512	512	505	
98	565	527	527	523	530	508	513	485	

Endurance

	61	63	64	115	116	167	168	219	220
4700	567	508	492	508	477	520	471	467	442
4699	542	513	499	512	500	540	495	482	477
98	558	512	498	518	500	514	500	487	482

	271	272	323	324	475	476	577	578		679
4700	471	432	417	404	396	355	332	295	Fade 1st 4700	266
4699	471	449	417	412	396	357	333	317		262
98	479	454	419	412	397	357	343	318		270

	680									
4700	255									
4699	248									
98	233									

Calipers

	Original	after 1st Run	Before after Endurance
4724	99 - 99 - 102	95 - 100	101 - 104
23	92 - 102 - 103	100 - 104	102 - 106
22½	91 - 101 - 103	99 - 104	99 - 100

Section I

4724 5 m Reconed 150 Fahr. 5% KOH.
23 15 h 100 rate assemble with seq ious
22½ Chg 15 h 200 dis 100 21.%

	1	2	3	4	5			
4724	486	497	219	517	508			
23	483	497	212	509	499			
22½	484	495	217	515	505			

Endurance

	58	60	61	112	113	164	165	216	217
4724	548	520	511	533	478	529	497	495	481
23	533	523	511	508	513	527	503	492	486
22½	50	517	50	510	487	512	471	455	444

	268	269	320	321	472	473	574	575		676
4724	479	456	433	430	413	378	348	330	Reading 5% KOH	278
23	480	457	433	433	400	373	350	348		297
22½	448	422	391	380	367	331	322	293		252

	677								
4724	240								
23	293								
22½	233								

Calipers

	Original	After 1st Run	Before Endurance	After Endurance
4734	87-101-100	95-101	100-103	
33	87-100-101	94-102	97-103	
32	90-102-102	99-103	100-103	

Section F

4734 5.ni Revised perforations chgd in
33 5% KOH. 150 Fahr 100 rots. 30 hours.
32 then assembled reg rems a chg 15 h 200 dis 100

	1	2	3	4	5	6
4734	622	538	518	511	530	513
33	618	50	540	512	528	511
32	619	538	523	513	530	515

Endurance

	59	61	62	113	114	165	166	217	218
4734	540	492	479	485	467	475	446	437	435
33	550	507	492	488	478	485	457	437	430
32	577	514	499	500	483	497	463	444	433

	269	270	321	322	373	374	425	426	Broken 2 [illegible]	477
4734	422	393	363	353	300	283	233	220	[illegible]	225
33	422	397	364	358	323	295	243	233	[illegible]	222
32	423	400	371	362	328	300	237	225	[illegible]	208

	678								
4734	212								
33	212								
32	207								

Calipers

	Original	1st Run	Endurance Before	Endurance After
4767	87-101-101	95-101	100-103	
66	90-100-103	97-103	102-105	
65	89-100-101	96-100	100-102	

Section I

4767, 66, 65 — 5 ml 21% made from stick KOH by Alcohol chg 15th 200 dis 100

	1	2	3	4	5	6	7	8	9	10
4767	497	492	506	513	490	515	515	488	498	487
66	506	507	512	521	512	513	522	490	500	500
65	505	507	512	522	502	515	517	493	501	500

Endurance

	63	65	66	117	118	169	170	221	222
4767	540	517	507	522	507	518	496	489	477
66	587	533	511	533	523	537	507	499	488
65	577	524	511	508	527	528	500	492	480

	273	274	325	326	377	378	379	380		431
4767	476	452	423	416	382	375	292	253	Tuesday-Nov 5th	233
66	488	461	432	416	381	355	298	267	Wednesday-Nov 6th	257
65	484	450	424	415	375	355	267	240		265

	482									
4767	230									
66	241									
65	214									

Calipers

	original	after 1st Run	Before Endurance	after Endurance
4777	91-107-104	101-103	103-104	
76	93-107-104	102-105	104-105	
75	93-105-103	101-105	105-106	

Section I

4777 5 mi Revised perf inside of cups
76 Cleaned with Emery paper —
75

	1	2	3	4	5
4777	499	507	517	510	515
76	496	506	513	510	512
75	501	507	517	512	515

Endurance

	58	60	61	112	113	164	165	216	217
4777	553	497	498	507	492	518	479	450	449
76	557	492	490	510	495	518	484	455	452
75	553	505	498	507	492	510	484	457	451

	268	269	320	321	372	483	574	575		676
4777	442	419	371	367	327	300	252	333	Track 7 Not well	233
76	446	425	378	378	331	312	267	250		230
75	441	418	363	361	312	283	253	233		239

	677									
4777	215									
76	213									
75	220									

Calipers

	Original	After 1st Run	Before Endurance	424 hrs
4804	96-109-107	103-106	111-112	117-113
03	95-106-106	99-105	108-108	113-114
02	95-106-106	104-108	113-110	118-115

Section II

4804 5 m 21% which has been heated 130 Fah.
03 10 hours with 1/2 cts bulk of shavings
02 from a side guide rubber from £18 cell.
~~[illegible]~~ Keep KOH from Carbonating by using a bottle + let it rest on Asbestos on hot plate
doun stairs need about 800 cc of 21%
Chg 15 h 200 dis 100 —

4804	492	497	500	478	489	489	
03	500	504	510	492	497	496	
02	492	497	500	486	489	489	

Endurance

	59	60	111	112	163	164	215	216
4804	500	511	522	497	483	457	445	422
03	506	517	521	500	488	467	449	433
02	496	507	517	494	482	455	447	427

	267	268	319	320	371	372	423	424	525	526
4804	395	392	347	317	267	255	203	208	200	133
03	400	400	355	333	287	267	233	247	300	270
02	400	400	357	320	296	293	247	250	237	210

		627	628						
4804	Final Wt	95	153						
03	Final Wt	167	223						
02	Final Wt	158	195						

Calipers

	Original	After 1st Run	Before Endurance	424# mm
4809	92-106-107	98-106	107-109	114-110
08	97-107-109	110-109	105-108	123-117
07	95-106-104	100-104	107-112	118-124

Section II

(800 cc 2½)

4809 | 5 m put in solution in which 10 Rubber
08 | pack rings, soft, from E 18 heat on hot
07 | plate down Jaro the whole being in a
Closed bottle, glass stopper, 15 hours
Use this solution in Little Cells –
Clig 15 h 200 d10 100

4809	501	503	508	482	492	488
08	492	497	500	477	481	482
07	504	507	510	487	496	492

Endurance

	59	60	111	112	163	164	215	216
4809	503	511	512	491	476	450	429	405
08	498	500	505	485	467	446	426	405
07	506	517	533	512	500	479	462	444

	267	268	319	320	371	372	423	424	525	226
4809	381	377	345	325	275	260	225	233	215	197
08	382	377	333	325	275	260	213	232	215	183
07	417	420	387	372	325	288	225	257	169	183

		627	628							
4809	Pounds	180	227							
08	Total	193	228							
07		191	226							

Calipers

	Original	After 1st Run	Before Endurance
48.16	92-106-104	101-106	104-106
14	93-102-101	103-102	104-106
12	92-102-104	105-106	112-108

Section II

4816 5 ml 1 gram precipitd Magnesium hydroxide
14 in Zachcell 2½ Chg. 15h 200 dis 100
12

4816	512	507	543	533	526	512
14	510	500	535	523	512	503
12	493	493	503	525	512	505

Endurance.

	59	60	111	112	163	164	215	216
4816	498	507	508	487	482	457	425	394
14	506	517	539	514	517	492	482	462
12	500	508	512	491	477	452	433	412

	267	268	319	320	371	372	423	424	525	526
4816	367	365	367	246	260	245	215	233	160	187
14	438	446	405	388	330	312	252	265	213	200
12	387	390	333	306	257	247	216	232	158	167

	Bowel Prep	627	628							
4816		163	223							
14		281	287							
12		182	222							

Calipers

	Big Calliper Original	After 1st Run	Before Endurance
4840	102-111-115	113-113	112-114
39	100-111-113	105-107	115-113
38	97-108-110	112-114	118-116

§ Section II

4840, 39, 38: 5 Ni to be charged 15 h 200 rate given to Edison after chg. He will put them in large quantity water until every Trace Potash comes out. Then they are to be put back in 21% & charged again 15 hours 200 rate & dis 100

4840	528	555	563	570	478	566	554	
39	530	555	563	573	559	567	565	
38	525	556	563	567	553	562	552	

Endurance

	60	61	112	113	164	165	216	217
4840	561	570	588	558	556	522	507	477
39	560	567	571	550	550	521	499	473
38	558	563	565	542	550	497	462	439

	268	269	320	321	372	373	424	425	526	527
4840	442	446	383	371	333	318	288	250	230	250
39	442	447	385	386	363	358	333	312	212	220
38	414	400	319	300	200	289	254	245	148	160

CO

		628	629							
4840	Fully Charged	250	283							
39		247	256							
38		160	225							

Calipers

	Original	After 10th Run	Before Endurance
4850	94-107-107	105-109	106-109
49	95-107-108	104-109	107-107
48	93-107-107	104-108	106-108

Section II

4850 | 5 ni removed perfo sent to Phono 10 ks
49 | plated heavier. Chg 15 h 200 ds 100
48

4850	505	512	533	532	518	517	532	
49	511	512	533	533	517	507	530	
48	505	512	452	533	535	523	533	

Endurance

	60	61	112	113	164	165	216	217
4850	514	519	533	511	494	475	457	445
49	512	519	532	507	486	476	467	452
48	513	517	533	510	500	475	466	447

	268	269	370	371	372	373	424	425	526	527
4850	416	421	362	365	357	352	345	330	312	310
49	424	428	380	375	363	361	353	330	330	320
48	424	427	380	383	370	367	367	370	267	267

		628	629							
4850	Transmission Rod Wall	191	208							
49		192	212							
48		267	283							

Calipers

	Original	After 1st Run	Before Endurance
4855½	91-105-104	100-105	104-106
55	94-109-105	98-103	110-109
54	93-104-104	97-103	103-105

Section II

4855½ 5 Mr. Reversed Perfo run in 21% Sol 800 cc in
55 Bottle put on hot plate 24 hours
54 Containing 1/3 cts bulk of separators from Henridge which are ready to go into Cells or taken from an old E18 cover have break up in 1/8 & 1/16 long pieces (Moulded) then fill bottle Cells from this solution

4855½	493	497	503	497	510	500	
55	492	497	503	492	511	500	
54	493	498	508	500	513	517	

Endurance

	59	60	111	112	163	164	215	216
4855½	527	525	522	506	494	474	457	439
55	509	507	522	498	486	461	446	426
54	522	520	543	517	509	475	467	440

	267	268	319	320	371	372	423	424	525	526
4855½	419	422	355	354	359	348	312	275	333	200
55	403	407	339	333	328	311	292	263	300	233
54	416	419	362	364	360	348	320	292	313	275

		627	628						
4855½	Endurance	190	220						
55	Endurance	205	230						
54	Endurance	210	242						

Calipers

	Original	After 1st Run	Before Endurance
4859	97-106-105	102-108	105-107
58	93-103-106	100-105	106-108
57	92-105-106	101-105	105-107

Section II

4859 Dup of 4855½ Except the 800 cc of
58 21% has 1/3 its bulk of new separators
57 Cut from sheet.

4859	500	495	503	517	517	513
58	498	495	503	531	517	507
57	498	498	507	483	518	510

Endurance

	59	60	111	112	163	164	215	216
4859	505	512	518	498	496	472	457	442
58	498	504	500	481	476	447	424	400
57	500	510	512	493	486	461	439	418

	267	268	319	320	371	372	423	424	525	526
4859	413	418	367	343	310	300	262	250	225	227
58	377	377	300	285	277	264	220	227	225	228
57	398	400	333	325	294	291	250	240	193	205

		627	628
4859	Pressed	200	242
58	Pressed	162	192
57	Pressed	167	215

Califed

	Original	after Run	Before Endurance
4864	97-104-105	105-106	109-108
63	95-105-105	98-103	105-104
62	98-108-109	105-109	106-108

Section II

4864 | 5 Pt Reversed perf dup 4855½ Except,
63 | 800 cc 21% hexo 1/3 bulk of fine shavings
62 | from the thin sheet rubber on sides of 2.18 –
Chg 15 h: 200 dis 100

4864	492	500	513	580	532	528	
63	493	485	498	539	515	512	
62	500	493	503	533	517	514	

Endurance

	59	60	111	112	163	164	215	216
4864	520	532	550	545	537	504	507	485
63	505	512	524	497	488	459	444	418
62	500	508	513	492	487	459	446	419

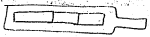
	267	268	319	320	371	372	423	424	525	526
4864	459	466	423	421	423	412	387	345	260	245
63	394	393	333	329	322	292	262	250	248	242
62	392	392	319	319	300	267	265	257	227	260

		627	628							
4864	Endurance	252	258							
63	400 hrs	178	230							
62		160	210							

Calipers

	Original	after 1st Run	Before Endurance
4878	93-104-106	104-104	106-108
77	95-106-108	104-105	108-106
76	93-107-106	103-107	107-107

Section II



4878 | 5 ns made up 3 sections, use reversed pcifs
77 | use 1070 milgrms in each section.
76 | 21% chg 15 h 200 clis 100

4878	500	503	505	504	512	488	526	500	507	495
77	508	518	517	515	522	498	538	509	523	505
76	508	518	520	517	523	498	536	507	523	500

Endurance

	59	60	115	116	167	168	219	220
4878	489	497	496	477	467	441	422	400
77	497	505	504	492	477	461	443	429
76	497	505	507	487	467	445	428	409

	271	272	323	324	375	376	427	428	529	530
4878	387	377	319	320	300	292	263	247	198	165
77	407	411	353	357	347	332	303	267	258	228
76	391	396	337	330	30	360	277	258	235	229

		631	632							
78	5 ns 1	122	157							
77	1070 mg	183	219							
76	Tmd	143	177							

Calipers

	Original	After 1st Run	Before Endurance
4885	93-101-103	101-106	107-105
84	90-102-102	100-103	105-106
82	93-101-105	100-104	106-102

Section II

4885 | .5 M Reversed Pafs – 2 grms gelatin
84 | do. in 21% KOH in each cell.
82 | Chg 15 h. 200 do 100

4885	433	498	502	300	367	453	510	
84	433	490	425	300	400	459	500	
82	417	490	460	425	433	467	500	

Endurance

	60	61	112	113	164	165	216	217
4885	517	506	400	400	550	539	512	509
84	511	506	333	433	544	521	507	494
82	527	524	341	400	553	531	505	486

	268	269	320	321	372	373	424	425	526	527
4885	482	487	387	380	253	247	143	132	112	97
84	471	474	383	367	233	223	143	133	80	83
82	461	462	342	333	228	207	117	122	110	122

	Breaking Wt.		628	629
4885	72	72	108	
84	113	113	162	
82	117	117	145	

Note – Curve is very good. Drops to low voltage since expanded time. – W.E.H.

Calipers

	Original	after 1st Run	Before Endurance
4900	95-104-103	93-102	106-103
4898	89-98-99	99-106	101-99
96	83-96-99	97-94	95-97

Section II

4900 5 M Reg. put in old C Cups 1250 holes
4898 21% chg 15 h 200 dia 100 — not new pay
4896

4900	478	473	483	480
4898	477	485	488	482
96	470	473	490	478

Endurance

	57	58	109	110	161	162	213	214
4900	467	482	492	477	470	447	443	430
4898	478	493	495	485	480	462	456	442
96	472	483	492	467	461	439	432	411

	265	266	317	318	369	370	421	422	523	524
4900	409	411	361	372	392	387	387	355	232	233
4898	420	422	377	379	397	390	358	323	243	297
96	395	397	342	333	353	340	312	265	187	198

	Index Tube Rot Spd	625	626							
4900		216	250							
4898		243	277							
96		194	223							

Calipers

	Original	After 1st Run	Before Endurance
4903	97-106-107	105-107	109-108
02	96-106-107	105-107	109-106
01	94-102-105	107-107	110-106

Section II

4903 Reversed perf old C cups
02 21% Chg 15 h 200 cls 100
01

4903	478	488	492	485
02	477	488	492	484
01	483	487	487	483

Endurance

	57	58	109	110	161	162	213	214
4903	480	492	511	487	483	452	428	415
02	487	492	500	480	462	433	400	390
01	472	482	492	465	450	424	396	386

	265	266	317	318	369	370	421	422	523	524
4903	377	392	378	333	333	333	320	265	150	162
02	377	367	278	394	267	267	278	222	155	153
01	377	367	267	394	267	267	263	212	145	147

	Bonding Rod Wt	625	626							
4903		162	176							
02		167	175							
01		127	153							

Calipers

	Original	After 1st Run	Before Endurance	432 mod mm
4909	88-100-98	99-99	102-99	113-112
08	91-101-103	99-104	102-105	116-113
07	93-104-104	100-104	108-104	118-115

Section II

4909	5 ni put in 5000 hole Cups -
08	chg 15 h 200 elu, ino -
07	

4909	485	497	492	488	
08	487	500	497	492	
07	490	500	497	491	

Endurance

	57	58	109	110	161	162	213	214
4909	487	496	504	487	488	457	443	467
08	504	509	523	505	512	477	453	460
07	497	505	511	499	500	470	450	476

	265	266	317	318	369	370	421	422	473	474
4909	425	423	367	383	393	372	190	333	160	155
08	442	442	392	390	397	397	367	353	329	328
07	433	437	377	394	390	383	367	357	167	179

	0	425	426							
4909	208 Apr 21	153	157							
08		250	203							
07	Brand 21	185	192							

Calipers

	Original	After 1st Run	Before Endurance
4060C	98-100-101	96-102	105-105
B	98-99-101	97-102	102-102
A	89-100-102	99-104	106-109

Section I

4060C Reg pockets 3.2 gms
60B Ribbed perforations
60A Smooth press 10.0 comp 75
Charged reverse 15 hrs in 33% KOH
assembled with charged lowes
Chg 15 hrs @ 200 disch @ 10.0

	1	2	3	4	5	6
4060C	539	534	543	458	367	532
B	533	528	536	450	383	522
A	522	515	532	367	375	508

Endurance

	59	61	62	113	114	165	166	217	218
4060C	592	543	507	543	522	495	483	458	442
B	547	522	483	512	488	460	450	442	417
A	547	508	467	508	467	438	420	380	400

KOH spilled put in here

	269	270	321	322	473	474	575	576		677
4060C	428	393	352	351	285	260	230	250	KOH fell in	241
B	400	375	340	332	257	257	265	263	KOH fell in	239
A	367	338	310	297	249	207	50	wire broke	KOH fell in	212

	678								
4060C	233								
B	222								
A	183								

Caliber

	Original	Ten Runs	Before Endurance
4060F	87-100-99	.2-108	105-105
E	94-102-102	.2-106	108-105
D	92-100-104	.2-110	105-106

Section I

4060F Reg pockets 3 in gms
E Revised perforations.
D Smooth press 100 comp 75
charged reg. 15 hrs in 33% KOH
assembled with charged mons
chg 15 hrs @ 200 discha @ 100

4060 F	517	535	529	358	375	522	
E	523	535	525	412	383	S.C.	521
D	521	518	530	358	333	527	

Endurance

				113	114	165	166 217		218
4060 F	538	508	483	500	478	482	447	415	403
E	543	510	483	508	492	460	457	433	417
D	572	508	492	508	461	442	433	400	402

Refilled KOH put in new

	269	270	321	322	473	474	575	576			677
4060 F	390	354	337	330	S.C.	180	S.C.	217			193
E	400	389	347	342	200	260	228	227			210
D	367	333	317	288	250	235	250	267			184

	678
4060 F	213
E	206
D	185

Calipers

	Original	After 1st Run	Before Endurance
4061C	87-97-103	110-116	105-108
B	89-102-103	102-108	99-105
A	86-98-102	100-102	102-99

Section I

4061.C Reg. cups #385. No mix 3.2 gm
B Fine graphite sprinkled on inside
A of cups. Pressed reg. rubber
with reg. rubber
chg 200 discha 100

	1	2	3	4	5	6
				500		
4061.C	518	533	529	479	491	522
B	540	545	541	496	508	533
A	535	543	533	471	483	524

Endurance

	59	61	62	113	114	165	166	217	218
4061C	585	547	532	544	515	527	503	493	482
B	583	552	550	555	528	523	512	508	495
A	573	547	533	533	523	517	507	497	496

	269	270	321	322	373	374	575	576		677
4061C	481	465	442	457	398	395	367	390	Break 7-14 Rock finish	293
B	489	477	452	460	350	345	175	178		197
A	489	465	443	467	417	393	378	383		350

	678
4061C	336
B	195
A	349

Calipers

	Original	after 1st Run	Before Endurance
4112	88-98-102	98-108	100-100
11	85-98-99	96-102	95-100
10	88-100-100	100-104	102-102

	684	685
4112	149	157
11	52	90
10	79	93

Section I

4112 Removed perforations 3.12 Rey
11 Mix to be charged .15 hrs 200
10 disch 100 21%

	1	2	3	4	5	6	7	8	9	10
4112	525	524	528	520	517	537	533	520	517	512
11	530	532	534	528	532	550	550	532	527	525
10	533	32.	527	523	528	547	543	532	525	519

	11	12	13
4112	515	357	507
11	527	371	513
10	525	354	500

Endurance

	66	68	69	120	121	122	123	224	225
4112	510	500	497	492	467	433	440	400	400
11	512	504	52.	524	481	438	447	433	413
10	500	483	486	467	447	417	420	387	382

	276	277	328	329	480	481	582	583	
4112	367	337	330	320	214	212	160	167	Broken 4-19
11	400	375	353	354	189	198	105	122	
10	352	317	302	287	159	150	100	108	

Calipers

	Original	After 1st Run	Before Endurance
41 99	87-100-101	101-102	99-100
98	94-101-101	100-102	104-105
97	90-100-103	95-100	100-101

	687	685
4199	97	97
98	145	143
97	149	149

Section I

4199 | 4 hr reversed 15 hrs 100 rate
98 | @ 1500° F in 33% acid KOH
97 | against C.P. Ni strip
charged and discharged in 2.1% KOH
chgd 15 hrs @ 200 run @ 100.

	1	2	3	4	5	6	7	8	9
4199	476	500	457	489	500	509	511	496	522
98	478	490	467	492	500	509	512	487	520
97	482	493	466	487	510	514	517	490	527

	10	11	12	13	14	15	16		
4199	498	509	507	510	506	530	503		
98	498	509	503	510	516	532	500		
97	500	517	508	514	516	537	515		

Endurance

	69	71	72	123	124	175	176	227	228
4199	567	533	524	532	500	493	472	467	453
98	570	523	532	538	511	507	500	493	473
97	567	533	533	557	529	520	515	507	492

	279	280	331	332	483	484	585	586	
4199	447	417	408	395	133	140	27	43	Not part of endurance
98	467	458	437	442	300	293	77	87	
97	481	468	453	457	367	363	229	233	

Calipers

	original	after 1st Run	Before Endurance
42-13	88-100-101	99-100	98-103
11	88-98-102	96-104	97-104
09	89-99-101	100-102	110-105

Section F

42-13 | 5 hr. charged 15 hrs @ 200
11 | @ 175°F in Tumbler containing
09 | 33% KOH and 4 gms. Silicate Soda
Charged & discharged in 21%
Chg 15 hrs. @ 200 run @ 1.00.

	1	2	3	4	5	6	7	8	9
42-13	638	S.C.	567	497	503	508	510	503	475
11	607	552	517	482	464	453	467	413	416
09	703	733	708	673	659	642	647	600	597

Endurance

	62	64	65	116	117	168	169	220	221
42-13	490	505	523	537	510	508	507	487	473
11	433	442	455	450	447	438	447	417	408
09	531	528	537	526	512	493	500	467	467

	272	273	324	325	476	477	578	579	
42-13	475	450	425	467	350	337	247	S.C.	Fuse blown
11	400	372	350	342	238	233	228	227	
09	443	425	415	413	300	227	220	217	

	680	681							
42-13	233	230							
11	226	228							
09	200	210							

Calipers

	Original	After 1st Run	Before Endurance
4266	88-102-101	98-102	100-101
65	91-104-104	100-108	101-105
64	89-102-97	97-100	98-99

	273	274	325	326	477	478	579	580	Burnt in Mold	691
4266	467	437	410	418	267	255	182	187		108
65	487	442	409	413	350	320	252	265		219
64	449	417	402	397	262	238	167	167		140

	652
4266	110
65	230
64	152

4266	
65	
64	

Section F

4266 5 hrs #424 mix, mix dried 2 hrs.
65 @ about 220° before putting in
64 pockets and quickly used.
Soaked 96 hrs in 33% KOH, in big bottle on hot plate Avg Temp 144°F
Pockets heated 4 hrs @ 220°F and plunged quickly in 33%
Time elapsed from taking out of bottle and assembling with irons that have been run was 38 hrs.
Charge 15 hrs @ 200 deichy @ 100 in 21%

	1	2	3	4	5	6	7	8	9
4266	385	442	473	492	447	491	490	484	483
65	412	488	487	508	468	521	517	502	511
64	385	460	473	485	446	500	490	489	472

	10
4266	487
65	515
64	490

Endurance

	63	65	66	117	118	169	170	221	222
4266	547	526	522	532	505	530	500	493	470
65	590	562	548	583	517	532	577	497	470
64	547	530	523	530	505	488	482	473	455

Calipers

	Original	after 1st Run	Before Endurance
4356	92-102-103	100-104	104-104
55	90-101-104	97-102	102-103
54	91-102-104	99-105	103-105

	681	682
4356	398	266
55	267	254
54	302	293

Section I

4356 | 5 hrs charged @ 150° F 15 hrs
55 | @ 100° against C.P. hi strip
54 | in 33% KOH in tumbler
glass used instead of rubber
Soaked 6 hrs in 21%
Charged 15 hrs @ 200 discharg @ 100 in 21%

	1	2	3	4	5	6	7	8	9
4356	650	532	554	547	545	506	532	533	518
55	643	532	547	542	547	505	532	525	513
54	633	532	548	546	543	507	532	525	513

	10
4356	517
55	517
54	512

Endurance

	63	65	66	117	118	169	170	221	222
4356	590	562	547	540	518	512	500	493	477
55	593	562	547	557	507	532	507	492	490
54	607	562	549	566	533	500	515	497	492

	273	274	325	326	477	479	529	580	
4356	467	454	447	443	357	345	267	260	Made 21 hrs
55	477	455	433	467	363	360	297	295	
54	491	470	447	467	397	393	228	250	

Calipers

	Original	After 1st Run	Before Endurance
4361	89-109-110	105-108	104-106
60	88-109-110	105-107	108-110
59	89-110-111	100-102	104-107

	679	680
4361	218	223
60	209	216
59	197	204

Section I

4361 | 5 Ray-ni pressed @ 50 tons
60 | heat on hot plate + burner.
59 | slowly in 33% Acid 6 hrs.
assembled into cells in 33% KOH.
Charged 15 hrs @ 100. @ 150°F.
disconnected nickels and soaked
10 hrs in large jar of water
then dried on hot plate 3 hrs.
at 125°F
Smooth press 100 Corrugated 75
Assembled in cells and charged
again 15 hrs @ 100 disch. 100.

	1	2	3	4	5	6	7	8
4361	570	587	570	515	533	S.S.	507	530
60	583	582	575	537	539	523	520	530
59	518	518	525	513	516	495	490	508

Endurance

	61	63	64	115	116	167	168	219	220
4361	547	531	532	523	485	492	483	467	467
60	553	546	532	537	518	505	500	488	475
59	588	545	522	533	500	492	477	467	467

	271	272	323	324	475	476	577	578		
4361	450	429	422	412	348	332	257	253	5.3	Ni
60	458	443	430	423	352	347	258	255	5.3	Ni
59	456	422	408	399	307	279	220	215	5.3	Ni

Calipers

	Original	After 1st Run	Before Endurance
43.87	86-99-99	94-99	98-101
86	89-101-103	96-104	99-104
85	90-102-103	100-104	105-108

	275	276	327	328	479	480	581	582	Discharge Rate	683
43.87	487	463	456	442	183	167	40	42	3.7	142
86	500	486	472	472	400	390	337	357	3.7	254
85	438	417	415	398	283	227	155	157	3.7	158

	684
43.87	164
86	255
85	165

43.87	
86	
85	

Section I

43.87 | 5 hrs. Charged 15 hrs @ 100
86 | against C.P. in strip @ 150° F
85 | in 33% and then assembled
with irons charged 24 hrs @ 200
in 21% K.O.H @ 150° F.
The cell after assembling is to be
discharged @ 100 with out further
charging.

	1	2	3	4	5	6	7	8	9
43.87	413	535	525	263	497	521	570	517	515
86	418	553	547	717	491	520	5.0	5.0	498
85	443	605	567	545	570	548	535	554	538

	10	11	12
43.87	519	521	513
86	510	509	510
85	554	558	547

Endurance

	65	67	68	119	120	171	172	223	224
43.87	552	533	522	543	518	532	507	505	490
86	538	533	527	543	524	532	508	523	500
85	562	543	522	532	512	492	485	467	467

Calipers

	Original	After 1st Run	Before Endurance
439.1	92-103-104	100-105	92-102
90	91-102-104	99-106	104-106
89	92-103-104	100-106	100-104

	630	631							
439.1	183	193							
90	242	251							
89	257	260							

Section I

439.1 5 min. charged 1.5 hrs @ 100
90 in 27% @ 150° F. broiled
89 10 hrs in 21% then charged
15 hrs more @ 200 against C.S.
in strip then assembled with
irons which have been charged
24 hrs @ 200 in 21% @ 150° F.
After assembling discharge @ 100

	1	2	3	4	5	6	7	8	9
439.1	550	554	525	525	457	532	532	527	527
90	588	555	528	528	455	388	527	537	537
89	580	S.C.	483	479	423	365	S.C.	S.C.	

Endurance

	62	64	65	116	117	168	169	220	221
439.1	594	553	547	555	525	505	508	492	493
90	606	553	547	550	525	510	507	490	480
89	563	546	522	544	513	522	506	500	482

	272	273	324	325	476	477	578	579	
439.1	478	458	433	S.C.	342	320	233	233	Final Voltage
90	467	453	440	467	383	368	313	313	
89	487	454	444	437	367	360	300	300	

Calipers

	Original	after 1st Run	Before Endurance
4396	90-100-103	97-103	102-105
95	92-101-105	98-103	104-105
94	92-102-104	100-105	104-106

Section I

4396 Same as 4389 but with
95 reverse perforations
94

	1	2	3	4	5	6	7		
4396	517	542	530	549	527	530	522		
95	533	543	530	552	527	522	530		
94	540	543	532	551	530	517	528		

Endurance

	60	62	63	114	115	166	167	218	219
4396	570	527	515	522	528	455	450	412	410
95	575	543	522	522	493	458	450	427	412
94	570	543	520	525	498	483	467	452	438

	270	271	322	323	474	475	576	577	
4396	388	361	333	333	232	255	217	200	5
95	400	372	347	338	229	217	200	193	4
94	428	375	369	353	215	200	167	167	3

	678	679							
4396	136	155							
95	130	159							
94	112	111							

Calipers

	Original	after 1st Run	Before Endurance
4406	96-107-107	105-110	119-111
05	96-106-109	105-110	125-116
04	100-110-111	110-114	121-117

	271	272	323	324	425	426	577	578		679
4406	391	379	327	295	207	200	158	175	Before Run	.100
05	347	337	318	297	215	209	216	220		.194
04	367	354	312	291	196	188	55	150		.118

	680
4406	117
.05	197
.04	139

Section I

4406 | 5 hr made dry mix Made
05 | from green nickel and powdered
04 | in agate mortar very fine
rolled without water 8 + 2 of the graphite. One part recovered & one part coarse 3.2 gram cake
Pierced perforations
Charged 15 hrs @ 100 against nickel strip in 33% @ 150° F then washed 10 hrs in 21% KOH
Charged again 15 hrs @ 200 against nickel strip and assembled with irons charged 24 hrs @ 200 in 21% @ 150° F and discharged @ 100

	1	2	3	4	5	6	7	8
4406	612	605	567	545	552	553	540	500
05	642	612	567	553	567	571	555	567
04	622	593	558	535	548	554	527	558

Endurance

	61	63	64	115	116	167	168	219	220
4406	540	515	518	483	472	455	451	437	433
05	540	530	550	440	453	443	452	383	400
04	537	512	522	467	467	438	433	400	400

Calipers

	Original	After 1st Run	Before Endurance
44.16	92-102-102	96-104	102-105
15	85-98-99	95-100	98-102
14	89-99-105	98-104	103-103

	679	680									
4416	110	118									
15	127	124									
14	120	127									

Section I

4416 | 5 min. reverse perforations
15 | soaked 24 hrs. in 33% @ 150°F
14 | Soaked 12 hrs. in large jar water.
Dried on hot plate on paper
Then recorrugated @ 75 atmos
Charged 15 hrs @ 100 against CP Nickel
strip in 33% KOH @ 150°F.
Soaked 10 hrs in 21% and assembled
in cells with rings charged 24 hrs
@ 200 hot after assembling
chg. 15 hrs @ 200 ordinary @ 100 in 21%

	1	2	3	4	5	6	7	8	
4416	598	519	532	457	533	541	533	531	
15	587	513	528	452	532	532	532	525	
14	597	520	527	543	537	542	532	533	

Endurance

	61	63	64	115	116	167	168	219	220
4416	557	545	521	525	492	467	467	432	418
15	570	516	508	508	473	452	450	400	408
14	574	534	521	522	485	458	447	397	387

	271	272	323	324	475	476	577	578	
4416	408	392	352	345	200	191	93	117	[illegible]
15	390	382	333	343	222	207	117	143	[illegible]
14	391	367	340	322	214	200	133	150	[illegible]

Calipers

	Original	After 1st Run	Before Endurance
4589	122-120-117	146-135	154-135
88	122-118-118	145-136	153-134
87	121-120-116	147-134	155-129

	650	651
4589	297	320
88	330	350
87	345	353

Section I

4589 | 3.Ni 3.84 gm # 21.84 gms
88 | 2.56 Ni(CO)4
87 | Pressed 100 smooth 100 corrugated with Goddards concave & convex dies. Material loaded in outside cup. The inside cup being concave. Put in 21% KOH & chg regular with two reg charged Fes.
Run 3 times @ 100 & 5 times @ 500

					500 note					
4589	570	582	579	525	533	500	575	563	582
88	569	578	572	533	525	600	570	558	580
87	570	573	575	533	550	50	567	558	565

Endurance

	62	64	65	116	117	168	169	220	221
4589	650	577	600	653	647	604	587	583	575
88	648	600	590	643	609	610	593	577	575
87	612	600	580	640	607	597	583	578	562

	272	273	324	375	476	477	528	529	
4589	597	576	590	600	497	485	360	355	5-1
88	583	572	567	602	508	512	412	402	Run 1-3
87	579	567	573	600	514	516	423	493	Run 4-8

Calipers

	Original	after 1st Run	Before Endurance
4592	101-97-97	169-104	117-102
91	102-98-98	114-110	118-99
90	102-96-99	114-109	117.-103

	680	681							
4592	100	127							
91	217	317							
90	206	220							

Section I

4592 | 3 ni 3.12 gms # 424 Reg. Ni Mix
91 | Reverse perforations of reg. strip
90 | Ni plating (cups marked by HCl + KOH)

Goddards concave - convex dies
Inside cup loaded in regular way
Pressed 100 smooth 100 corrugated
Run in 2190 against 2 charged Fers.
Run 3 times @ 100 + 3 times @ 500

					500 volts				
4592	515	526	525	417	442	400	537	517	527
91	512	527	528	417	425	425	548	517	530
90	508	522	522	417	425	392	533	538	519

Endurance

	62	64	65	116	117	168	169	220	221
4592	596	533	530	557	517	492	477	458	451
91	558	543	542	573	532	498	490	458	461
90	567	531	520	547	509	493	480	458	457

	272	273	324	325	476	477	578	579	
4592	450	418	362	367	266	240	130	140	5.5
91	449	421	363	377	300	292	257	255	5.5
90	444	415	363	372	264	248	90	80	5.5

Calipers

	Original	After 1st Run	Before Endurance
4914	93-103-103	105-109	110-106
12	94-103-104	105-105	111-107
11	89-101-102	92-102	109-106

Section II

4914 5 hr in 5000 hole cups
12 Reversed perforations. 3.2 215/0
11 chg 15 hrs @ 200. Run @ 100

4914	487	500	482	494						
12	480	492	489	477						
11	478	488	487	481						

Endurance

	57	58	109	110	161	162	213	214	265	266
4914	500	515	532	500	509	470	467	490	452	447
12	480	495	513	478	487	451	443	460	421	421
11	480	493	507	477	484	447	437	457	412	414

	317	318	369	370	421	422	473	474		625
4914	392	393	414	412	411	397	353	362	[illegible]	293
12	348	360	367	367	362	338	348	247	[illegible]	230
11	327	343	350	365	344	335	329	327	[illegible]	250

	626									
4914	286									
12	225									
11	243									

Calipers

	Original	After 1st Run	Before Endurance
49.21	98-98-102	96-100	
20	98-100-103	97-104	100-104
19	98-100-100	96-102	100-103

Section #5

11.921	Group of 10 lbs. old iron mill
20	do. made anode in 33%
19	@ 100 rate for 15 hrs assembled with reg. nickels

Charged 15 hrs @ 200 discharge @ 100

49.21	508	517	505	508	513	520	502	499	500	
20	505	507	497	500	500	514	495	493	495	
19	500	510	502	487	503	513	490	499	500	

Endurance

	62	63	114	115	166	167	218	219	270	271
49.21	514	525	547	515	522	483	475	497	454	456
20	488	508	533	500	489	447	433	455	407	394
19	506	523	543	513	514	477	474	497	456	452

	322	323	374	375	426	427	528	529		630
49.21	392	400	406	400	377	333	228	220	Reg. Nickel	320
20	300	325	283	300	244	255	167	179		219
19	380	393	397	393	367	330	223	243		253

	631									
49.21	277									
20	228									
19	243									

Calipers

	Original	After 1st Run	Before Endurance
4927	90-101-102	98-102	109-105
26	91-102-103	97-103	105-106
25	90-99-101	97-103	108-104

	633
4927	217
26	240
25	248

Section II

4927 5 nickels Reversed perforations
26 21 70 ℓ O.H. put in little cell. 2 gms
25 Sulphate of Potash
Chged 15 hrs @ 200

4927	488	514	508	505	497	525	512	507	508	500
26	486	573	505	497	497	525	512	508	508	500
25	486	510	503	505	495	523	517	508	570	500

4927	498									
26	498									
25	500									

Endurance

	64	65	116	117	168	169	220	221	272	273
4927	505	518	531	500	500	446	445	467	423	419
26	500	516	522	503	498	461	433	403	427	422
25	506	520	517	500	487	457	429	455	398	394

	324	325	376	377	428	429	530	531		633
4927	348	352	343	333	293	232	165	167	Pulsing Not Pulsing	167
26	347	353	342	333	295	260	187	190		219
25	315	327	313	300	294	260	190	193		227

Calipers

	Original	After 1st Run	Before Endurance	
4938	104-101-105	102-106	108-106	
36	89-103-103	98-103	102-105	
34	90-101-102	99-102	103-105	

Section II

4938 | 5. Nickels Revised perforations
36 | 21 % KOH. containing 5 grammes
34 | of Cyanate of potash (not cyanide).
Chg 15 hrs @ 200 · Run @ 100

4938	463	480	495	467	463	495				
36	458	478	475	467	433	467				
34	465	490	493	473	464	495				

Endurance

	59	60	111	112	163	164	215	216	267	268
4938	499	507	529	513	508	464	462	495	439	437
36	493	500	505	477	487	445	433	467	425	421
34	498	507	530	514	507	458	453	495	444	440

	319	320	371	372	423	424	525	526		627
4938	357	367	365	365	242	232	177	187	Tests only not run	280
36	353	350	348	333	267	258	167	183		227
34	373	391	380	367	300	292	188	178		255

	628									
4938	252									
36	227									
34	180									

Calipers

	Original	After 1st Run	Before Endurance
4948	92-102-104	99-103	99-105
47	94-103-105	99-104	103-105
46	93-102-105	100-107	105-106

Section II

4948 | 5 Nickels in 71% Revised
47 | perforations containing 3
46 | grammes of Sugar
Chgd 15 hrs @ 200 dischgd @ 100

4948	455	491	500	502	483	497					
47	455	498	507	502	467	465					
46	382	487	527	502	486	497					

	59	60	111	112	163	164	215	216	267	268
4948	525	521	528	525	497	464	447	467	476	424
47	467	482	488	463	472	441	430	453	407	397
46	520	528	523	477	497	445	442	460	416	414

	319	320	371	372	423	424	525	526		627
4948	272	82	313	82	298	273	177	177	Pounds 7.75	188
47	293	092	292	250	180	167	87	108	Pounds 7.75	150
46	333	357	343	333	252	227	177	162	Pounds 7.75	218

	628									
4948	212									
47	100									
46	197									

Calipers

	Original	after 1st Run	Before Endurance	after 272 Runs
4958	114-109-109		107-100	125-110
57	114-110-110	109-113	107-100	127-116
54	112-107-110		100-107	125-112

Section II

4958 | 5 Nickel Revised perforations
57 | Cups made with new 5.5 inch
54 | Corrugations. No smooth die used but only one pressure used & that with new die,

Press 5 atmos 21% chyd 1.5 hrs discharge @ 100

4958	400	390	367	367	367	367	344	353	347	345
57	330	293	271	277	269	279	250	240	249	247
54	357	323	308	314	300	310	291	290	295	290

Endurance

	63	64	115	116	167	168	219	220	271	272
4958	233	300	267	258	230	195	156	194	167	155
57	190	185	167	155	133	133	88	100	100	97
54	233	267	219	197	167	143	117	133	12[illegible]	121

4958										
57										
54										

CD Day of Repress to 200 atmos

4958										
57										
54										

Calipers

	Original	after 1st Run	Before Endurance	after 272 Runs
4963	112-108-112	117-111		122-110
61	114-110-111			127-118
60	115-110-114			130-120

Section II

4963 Dup. of 4954 with 1.0 atmos
61
60

4963	433	420	416	407	412	405	488	392	397	380
61	443	429	417	422	432	424	408	430	419	400
60	449	432	417	420	425	417	400	88	400	392

Endurance

	63	64	115	116	167	168	219	220	271	272
4963	88	333	345	358	290	267	222	233	185	183
61	382	392	350	333	290	267	222	238	195	195
60	382	392	347	388	298	297	238	256	200	195

4963										
61										
60										

CO

4963										
61										
60										

Calipers

	Original	After 1st Run	Before Endurance	After 272 Run
4968	113-108-110	118-113		120-116
67	114-107-112	115-109		127-110
64	113-105-107	113-109		127-122

Section II

4968	Dup of 4954 at 20 atmos
67	
64	

4968	484	463	483	479	477	479	461	462	467	458
67	482	463	485	480	477	482	463	463	467	457
64	451	453	462	452	451	450	466	433	438	428

Endurance

	63	64	115	116	167	168	219	220	271	272
4968	433	452	430	414	387	367	343	373	328	315
67	489	455	433	415	387	359	340	367	316	300
64	432	433	423	398	377	357	333	367	319	312

4968										
67										
64										

CD

4968										
67										
64										

4968										
67										
64										

Calipers

	Original	After 1st Run	Before Endurance	After 272 Runs
4973	114-110-112	114-108		122-114
71	115-110-105	118-112		130-115
70	113-108-109	118-114		125-108

Section II

4973 Dup of 4954 at 40 atmos
71
70

4973	490	488	500	497	500	499	486	475	484	467	
71	488	487	497	492	495	483	473	477	464	475	
70	508	494	507	500	504	505	492	498	500	492	

Endurance

	63	64	115	116	167	168	219	220	271	272
4973	467	492	497	475	471	443	431	455	416	411
71	467	488	477	452	436	400	381	403	367	357
70	492	507	508	482	474	442	428	457	406	398

4973										
71										
70										

4973										
71										
70										

4973										
71										
70										

Calipers

	Original	After 1st Run	Before Endurance	After 272 Runs
4977	109-105-108	112-103		128-113
76	110-107-108	116-107		125-120
74	110-108-108	116-110		130-115

Section II

4977 Duk of 4954 at 8.0 atmos
76
74

4977	503	507	513	508	511	513	498	500	497	
76	513	488	500	489	482	497	498	490	482	
74	458	450	442	428	422	418	408	400	413	393

Endurance

	62	63	114	115	167	168	219	220	271	272
4977	499	502	513	500	500	470	461	480	447	442
76	483	500	500	485	483	450	438	457	421	417
74	398	420	400	387	377	353	338	347	328	325

4977										
76										
74										

CO

4977										
76										
74										

4977										
76										
74										

Calipers

	Original	After 1st Run	Before Endurance	422nd run
4982	102-101-102	106-105		124-116
81	102-100-101	112-104		120-115
80	104-102-103	108-102		126-100

Section II

4982 Dup. of 4954 at 160 atmos

81

80

4982	507	496	513	511	512	511	507	505	517	503
81	498	496	510	508	508	508	498	494	509	498
80	522	513	527	521	525	527	513	513	526	513

Sydurgnge

	63	64	115	116	167	168	219	220	271	272
4982	512	514	512	512	537	487	479	510	474	474
81	520	520	523	512	517	487	493	498	467	467
80	576	533	523	518	553	500	500	514	481	481

	323	324	375	376	427	428	524	530	0	631
4982	420	400	452	442	380	378	325	328	Broken	253
81	417	423	446	431	367	350	317	367	2084	253
80	440	427	452	441	367	350	323	267	Broken	217

	632
4982	242
81	230
80	233

4982										
81										
80										

Calipers

	Original	After 1st Run	Before Endurance
4987	93-102-107	103-110	108-110
86	93-101-105	98-102	106-106
84	93-104-104	101-105	104-106

Section II

4987 | 5 Rej Ni. Retrieved perforations
86 | 21% Containing 5 gms. Citrate
84 | Potash

Chyd. 75 hrs @ 200 Dischyd @ 100

4987	467	497	499	523	484	496				
86	474	508	572	523	497	505				
84	472	499	506	504	492	500				

Endurance

	59	60	111	112	163	164	215	216	267	268
4987	497	573	517	497	483	449	428	452	406	406
86	523	540	548	527	525	492	481	500	452	459
84	515	527	527	510	507	470	447	467	418	417

	319	320	371	372	423	424	525	526		627
4987	305	327	350	323	343	332	313	267	Pounds-Sq. Inch	182
86	392	397	404	393	300	347	373	367		223
84	333	352	333	323	344	328	323	333		183

	628									
4987	205									
86	230									
84	227									

Calipers

	Original	After 1st Run	Before Endurance
5030	91-103-105	100-106	103-108
29	91-102-103	100-105	102-107
28	90-100-102	98-105	102-107

Section I

5030 5 Reg. Mix. Reversed Perforations
29 2.10% Containing 2 grammes of
28 Glucose in each cell
Chg'd. 15 hrs. @ 200 discharged @ 100
Solution Red.

5030	407	459	486	490	502	507				
29	387	452	483	483	500	514				
28	383	437	471	468	494	500				

Endurance

	59	60	111	112	163	164	215	216	267	268
5030	492	500	503	475	466	446	420	400	354	322
29	507	527	521	518	522	498	472	461	440	440
28	496	513	527	500	483	450	433	425	400	393

	319	320	371	372	423	424	475	476		627
5030	267	247	270	250	184	188	142	163	Broke in 3 hrs. 10 min.	106
29	380	392	397	384	295	272	197	207		208
28	332	327	310	295	183	196	147	157		145

	628								
5030	153								
29	178								
28	148								

Calipers

	Original	After 1st Run	Before Endurance
5035	91-103-103	99-105	103-107
34	90-101-103	98-103	103-107
33	90-103-104	99-105	104-107

Section II

5035 5 Reg in Reversed Perforations 21%
34 The Solution contains 2 grammes
33 of filter paper in each cell. cut about 18 square Chgd. 15 hrs 200 Dialy @ 100

	60										
5035	503	503	510	496	515	517	483				
34	488	490	493	491	499	500	483				
33	505	510	516	503	521	518	497				

Endurance

	60	61	112	113	164	165	216	217	268	269
5035	492	506	498	481	462	433	417	400	357	345
34	478	492	490	472	447	424	396	389	357	345
33	491	505	492	472	462	432	400	395	353	340

	320	321	372	373	424	425	526	527		628
5035	233	235	267	247	182	182	158	133	Made 2.196 Not Well	160
34	267	267	263	233	176	162	217	272		127
33	233	233	253	233	154	216	258	200		103

	629								
5035	195								
34	147								
33	57								

Calipers

	Original	after 1st Run	Before Endurance
5041	91-101-101	98-102	104-105
40	91-104-101	100-107	102-105
38	90-100-103	98-104	103-104

Section

5041 | 5 Reg Ni Reversed Perforations 2.1%
40 | Containing 2 grammes Acetone
38 | in each cell
Chg d. i 65 hrs @ 2.00 Discharged @ 1.00
5038 - Solution Yellow + flocculant

5041	196	315	383	432	431	463				
40	117	255	320	398	380	433				
38	198	323	387	440	445	467				

Endurance

	59	60	111	112	163	164	215	216	267	268
5041	422	445	350	422	200	192	166	200	295	160
40	395	428	333	395	398	372	325	267	300	191
38	423	443	367	427	377	300	289	80	225	167

	319	320	371	372	423	424	525	526		627
5041	117	117	120	115	50	67	20	26	Break 7.0%	
40	215	167	167	133	100	104	85	90	Not Quit in	85
38	156	150	150	147	120	127	97	113		122

	628									
5041	43									
40	117									
38	152									

Calipers

	Original	after 1st Run	Before Endurance	
5045	92-103-104	[illegible]	103-104	
44	95-106-106	[illegible]	106-107	
43	89-100-102	[illegible]	99-100	

Section II

5045 | 5 Rep Nis Pressed. Perforations 2 1/2
44 | Containing 2 gms. Hypophosphous
43 | Potash

Chgd. 15 hrs @ 12:00. Discharged @ 1:00

5045	457	489	485	497	490	490					
44	438	491	482	487	485	492					
43	437	471	462	476	470	475					

Endurance

	59	60	111	112	163	164	215	216	267	268
5045	575	520	500	494	516	480	475	457	433	443
44	574	523	498	492	517	495	480	462	445	452
43	498	500	467	472	483	452	444	431	410	408

	319	320	371	372	423	424	475	476		527
5045	383	400	383	383	319	316	323	326	Breaking Strength	172
44	390	400	392	383	343	342	267	278		222
43	347	350	350	333	257	251	207	172		93

	628									
5045	225									
44	233									
43	100									

Calipers

	Original	After 1½ Run	Before Endurance
5052	92-102-104	102-104	108-106
51	91-102-103	100-104	105-106
50	91-101-103	101-104	104-106

Section II

5052 | 5 Reg Ni. Pennied Perforations 21%
51 | Containing 3 gms precipitated
50 | (fish) Carbonate of Lime
Chgd 15 hrs @ 1.00 Discharged @ 1.00

5052	490	498	512	500	498	505	500			
51	487	494	507	492	492	497	498			
50	487	497	508	508	493	499	500			

Endurance

	60	61	112	113	164	165	216	217	268	269
5052	506	510	497	481	500	473	457	429	400	374
51	498	498	467	467	483	448	440	423	367	357
50	506	513	500	482	514	477	458	441	400	384

	320	321	372	373	424	425	526	527		628
5052	333	242	257	223	233	222	132	153	Broke 1:10 Not Wed.	158
51	275	297	252	220	215	205	132	152		158
50	283	303	287	267	217	233	130	207		180

	629
5052	178
51	180
50	206

Calipers

	Original	After 1st Run	Before Endurance
5057	92-103-104	101-105	108-105
56	92-105-104	103-106	108-108
54	92-105-105	101-106	110-109

Section II S

5057 | 5 Reg Nis Pressed Perforations in
56 | 21% Containing 2 grammes of
54 | freshly precipitated carbonate
of Barium
Chyd. 15 hrs @ 200 Dischyd @ 100

5057	494	503	512	508	506	500	500	517	510	500
56	494	503	512	512	507	497	500	531	512	500
54	493	506	517	514	507	500	500	531	514	507

Endurance

	63	64	115	116	167	168	219	220	271	272
5057	495	497	522	508	483	472	467	456	423	425
56	493	493	523	510	488	460	461	454	429	424
54	492	495	523	498	487	472	462	455	429	424

	323	324	375	376	427	428	529	530		631
5057	413	417	408	389	342	317	287	252	Broke on 273	260
56	398	393	370	357	317	273	300	225	Broke on 273	213
54	377	367	388	376	333	300	223	225		225

	632									
5057	247									
56	227									
54	217									

Calipers

	Original	After 1st Run	Before Endurance
5062	92-103-106	101-106	110-107
60	100-112-112	110-113	114-114
59	99-110-113	110-115	113-115

Section II. §

5062 | 5 Rey Nichols Revised Perforations in
60 | 21% containing 2 grammes
59 | freshly precipitated Carbonate
Magnesia Chgd 15 hrs @ 200 dischgd @ 100.

5062	483	486	493	492	489	485	492	573	495	485
60	533	547	554	558	555	549	560	577	558	550
59	533	543	552	546	545	533	550	558	545	537

Endurance

	63	64	115	116	167	168	219	220	271	272
5062	484	496	517	500	495	455	440	438	407	397
60	550	557	575	557	538	533	507	505	488	481
59	526	523	557	528	487	474	433	440	400	389

	323	324	375	376	427	428	529	530		631
5062	373	367	333	375	270	243	200	218	Before Endurance	208
60	450	447	408	400	333	274	294	243	After Endurance	260
59	390	377	267	232	217	205	167	155		199

	632									
5062	227									
60	267									
59	223									

Calipers

	Original	After 1st Run	Before Endurance
5066	92-105-104	101-106	108-107
65	95-106-106	103-107	105-105
64	91-104-101	98-106	104-105

Section II

5066 5 Reg Nichols Reversed Perforations
65 in 2.1% Containing 2 grammes
64 Magnesia Hydroxide
Chgd 15 hrs @ 200 Discharged 100

5066	482	493	505	499	488	495	498			
65	482	487	500	497	490	497	498			
64	485	494	513	492	495	505	503			

Endurance

	60	61	112	113	164	165	216	217	268	269
5066	483	492	497	503	465	442	412	400	367	355
65	497	501	518	517	507	477	459	454	428	430
64	501	514	533	530	508	482	466	457	433	438

	320	321	372	373	424	425	526	527		628
5066	277	281	245	233	216	207	200	217	Broke 7 of 8	217
65	390	397	372	353	307	283	257	250	Broke 7 of 8	247
64	390	393	349	325	283	257	257	250		249

	629									
5066	223									
65	257									
64	253									

Calipers

	Original	After 1st Run	Before Endurance	426 ± mm
5092	102-101-100	111-9.8	114-107	124-113
91	102-100-99	112-100	112-107	123-109
90	100-99-100	112-96	112-104	125-113

Section II 9

5092 5 Nickels big Corrugations
91 Corrugated 200 Atmos in 21 ⁰/₀
90 Chgd 5 hrs @ 200 Discharged @ 100

5092	506	517	525	529	518	515	510	503		
91	510	521	531	533	527	518	517	517		
90	600	524	533	541	533	525	528	524		

Endurance

	61	62	113	114	165	166	217	218	269	270
5092	587	578	555	528	533	480	506	488	475	477
91	516	533	507	542	552	520	522	500	486	489
90	530	532	585	555	565	517	522	500	486	489

	321	322	373	374	425	426	527	528		629
5092	442	447	443	433	417	393	347	358	Before Endurance	345
91	450	453	462	455	439	417	433	422	After Endurance	378
90	450	453	443	438	416	400	417	412		360

	630									
5092	327									
91	358									
90	332									

Calipers

	Original	After 1st Run	Before Endurance	420 ± mm
50.95	99-99-98	111-100	109-109	123-114
94	101-98-100	108-100	110-107	121-113
93	102-98-100	109-98	108-102	118-105

Section II

50.95 Drop of 50.92 in 21.070
94 Except 250 Atmos
93 Chg'd 15 hrs @ 200 Discha'd 100

50.95	482	479	532	538	531	523	528	520			
94	446	464	524	537	531	524	527	523			
93	467	512	537	546	537	531	532	528			

Endurance

	61	62	113	114	165	166	217	218	269	270
50.95	522	533	577	547	554	521	517	504	487	492
94	524	527	567	545	555	525	512	503	492	497
93	528	538	577	557	588	547	533	513	498	508

	321	322	373	374	425	426	527	528			629
50.95	467	450	447	463	447	431	418	410	Drop 21.070		367
94	477	477	482	478	458	445	410	412	Drop 21.070		367
93	489	487	479	473	456	439	447	463			433

	630									
50.95	356									
94	472									
93	448									

Calipers

	Original	After 2 Run	Before Endurance	420th mm
5100	102-102-97	110-100	114-101	119-110
5099	98-97-97	107-96	109-106	120-113
98	98-96-97	107-92	108-103	120-112

Section II

5100 Dup of 5099 in 21 ⁰/₀.
5099 Exc/pt 300 atmos
98 Chg'd 15 hrs @ 200 Discharged @ 100

5100	462	506	531	537	530	522	515	522		
5099	337	372	471	540	533	522	525	522		
98	475	521	537	542	533	527	528	525		

Endurance

	61	65	113	114	165	166	217	218	269	270
5100	519	533	577	548	562	520	525	509	490	500
5099	578	530	580	550	556	518	505	500	490	497
98	527	533	578	557	563	519	517	509	490	498

	321	322	373	374	425	426	527	528		629
5100	475	483	493	417	465	447	443	445		450
5099	460	450	475	447	422	402	317	327	Broke 7 hrs	427
98	467	467	480	475	457	439	397	400		420

	630									
5100	450									
5099	447									
98	433									

Calipers

	Original	After 1st Run	Before Endurance
5177	93-103-105	104-103	109-108
76	97-108-105	103-108	111-110
75	94-105-104	105-106	107-107

Section #6

5177, 76, 75 — 5 Reg Nichols run in 21%
Solution of Sodium Hydroxide made from metallic Sodium by JWA. Solution only to be used if free from Aluminia
Chgd 15 hrs @ 200 Discharged @ 100

5177	543	553	546	537	537	537				
76	543	557	550	543	537	537				
75	552	560	552	543	537	537				

Endurance

	59	60	111	112	163	164	215	216	267	268
5177	462	493	433	500	355	433	306	317	242	217
76	462	485	433	500	373	393	345	353	282	262
75	485	577	493	527	438	448	395	414	367	341

	319	320	371	372	423	424	525	526		627
5177	217	200	187	180	179	167	163	160	Back to 1st Run	150
76	233	217	187	183	178	171	160	163		153
75	315	292	232	232	212	203	200	200		198

	628
5177	153
76	180
75	227

Calipers

	Original	after 1st Run	Before Endurance
5219	93-103-106	103-108	105-107
18	91-104-104	100-105	101-104
17	92-104-105	102-106	103-104

Section II 5

5219 | 5 Rey Ni in 20% containing
18 | 3 grammes of Crystals in each
17 | cell of Barium hydrate
Chgd 15 hrs @ 200 Discharged @ 100

5219	497	500	496	502	500					
18	499	505	497	497	500					
17	499	506	499	507	508					

Endurance

	58	59	110	111	162	163	214	215	266	267
5219	497	509	520	513	485	462	445	438	411	413
18	496	505	518	512	486	462	445	438	409	410
17	500	512	517	512	490	475	445	438	408	409

	318	319	370	371	422	423	534	535		626
5219	353	362	347	333	267	252	255	242	Charged 1 hr	228
18	349	351	333	322	265	247	237	233		217
17	348	347	313	300	262	246	237	235		229

	627									
5219	243									
18	220									
17	243									

Calipers

	Original	After 1st Run	Before Endurance
5229	93-105-105	98-104	103-104
28	93-106-104	97-103	108-105
27	92-103-103	98-107	104-108

Section II

5229 | 5 Rg ml in 21 Mo.
28 | containing 1 grammes Stannate
27 | of an alkali + 500 milligrams aluminium (aluminium was left out)
chgd. 15 hrs @ 200 Dischgd @ 100

5229	509	518	514	517	514	514				
28	507	518	515	514	513	513				
27	507	517	516	514	512	512				

Endurance

	59	60	111	112	163	164	215	216	267	268
5229	500	528	525	S.C.	492	467	445	442	421	422
28	502	508	523	517	486	467	433	427	409	412
27	500	515	533	520	58	462	432	463	443	451

	319	320	371	372	423	424	529	530		627
5229	382	383	360	367	305	283	257	252	Took 21 of Rog Ml.	227
28	347	351	323	310	272	249	222	215		205
27	405	400	392	391	356	333	300	295		250

	628									
5229	228									
28	222									
27	252									

Calipers

	Original	After 1st Run	Before Endurance
5234	99-102-103	98-104	107-107
33	92-100-105	99-102	103-103
32	90-101-104	98-105	105-106

Section II

5234 | 5 Reg Ni. 21.9% Containing
33 | 2 gr ammonia Flouride of Potash
32 | oi soda
Note - 400 Milligrms K Flouride to cell
chgd 15 hrs @ 200 Dischgd @ 100

5234	507	508	510	507	550	526	527			
33	507	509	512	517	541	525	525			
32	506	508	509	515	537	518	515			

Endurance

	60	61	112	113	164	165	216	217	268	269
5234	507	517	533	520	522	475	490	446	440	446
33	507	516	533	518	522	467	490	446	442	456
32	485	498	517	505	492	467	440	410	400	400

	320	321	372	373	424	425	526	527	Max. Diff.	628
5234	395	393	375	379	367	377	307	310	177	
33	367	380	351	350	307	313	300	197	192	
32	343	347	320	317	108	233	70	130	167	

	629
5234	210
33	187
32	212

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Calipers

	Original	After 1st Prime	Before Endurance
5238	93-104-104	97-103	105-108
37½	93-105-105	95-104	106-106
37	93-103-107	98-103	102-105

III

5238 | 5 Reg Ni 2190 Solution from
37½ | Stick Potash which had
37 | been purified by time instead
of Barium
Chyd. 15 hrs @ 200 Finishy @ 100

5238	515	515	523	525	500	497	507	507			
37½	510	520	517	518	492	487	497	497			
37	508	518	514	513	492	488	497	497			

Endurance

	61	62	113	114	165	166	217	218	269	270	
5238	520	512	517	507	500	452	458	422	387	396	
37½	517	500	518	507	500	452	467	433	387	396	
37	519	508	522	512	510	455	478	433	418	433	

	321	322	373	374	425	426	527	528		629	630
5238	330	327	300	300	267	267	231	239	Finishy 5238	222	233
37½	343	350	300	300	267	267	217	220	Finishy 37½	222	233
37	367	367	353	357	310	317	247	242	Finishy 37	238	253

5238											
37½											
37											

Calipers

	Original	After 1st Run	Before Endurance
5243	91-104-105	101-107	105-107
42	92-102-104	100-107	108-109
41	92-105-105	101-107	108-109

FH

5243 | 5 Reg Min 210° Containing 4 & C
42 | of Peroxide of Hydrogen
41 | Chgd 15 hrs @ 200 Discharged @ 100

5243	507	526	513	533	512	517	513			
42	499	527	517	533	517	520	519			
41	490	498	517	523	505	507	508			

Endurance

	60	61	112	113	164	165	216	217	268	269
5243	433	519	520	500	517	467	473	433	442	433
42	525	512	533	493	521	460	467	421	433	433
41	525	508	528	490	517	450	458	422	428	404

	320	321	372	373	424	425	526	527		628
5243	386	382	367	355	343	317	198	195	Finish 3 hrs	223
42	358	352	319	290	267	233	50	57	Rest 4 hrs	120
41	347	352	333	317	321	297	217	208		212

Co

	629									
5243	233									
42	87									
41	227									

Calipers

	Original	After 1st Run	Before Endurance
5263	93-104-105		100-106
62	95-106-106		102-108
61	94-106-105		104-108

5263 5 ml 2% o/o which has been
62 heated to 150 with 5 grammes of
61 powdered green nickel hydroxide
for 5 or 6 hrs then solution cooled & poured
off into cells.
Chgd 15 hrs @ 200 Discha @ 100

5263	472	475	483	488	477					
62	500	494	500	508	498					
61	496	487	497	504	494					

Endurance

	58	59	110	111	162	163	214	215	266	267
5263	500	490	518	470	496	442	467	433	410	422
62	525	500	533	500	543	470	488	450	501	423
61	521	510	528	500	521	467	490	445	428	433

	318	319	370	371	422	423	474	475		526
5263	375	382	353	348	310	312	215	233	Production Run Not Left	.178
62	367	382	333	333	281	267	243	223		.133
61	383	387	350	342	317	312	263	252		.193

	577
5263	.198
62	.143
61	.207

Calipers

	Original	After 1st Run	Before Endurance
53 25	96-108-105	104-110	107-108
24	98-102-102	94-103	95-102
23	90-107-105	95-105	103-105

III

53 25 | 5 Rey W 2190 made from Sump
24 | Potash and not treated with Barium
23 | Chgd 15 hrs @ 200 Discharged @ 100

53 25	467	491	473	483	479					
24	477	482	460	487	487					
23	477	499	477	491	487					

Endurance

	58	59	110	111	162	163	214	215	266	267
53 25	477	447	508	473	492	447	437	400	397	385
24	494	483	505	477	497	447	457	420	419	422
23	528	498	527	490	509	454	448	410	392	400

	318	319	370	371	422	423	524	525		626
53 25	350	352	318	300	320	297	231	212	Probably 1st Run	187
24	367	367	366	355	357	355	358	245		195
23	357	358	318	307	320	300	257	233		200

	627
53 25	207
24	218
23	223

Calipers

	Original	After 1st Run	Before Endurance
5379	92-105-103	98-103	101-104
78	94-104-102	99-102	102-104
77	10-104-102	99-105	105-105

5379 | 5 Reg Nir 21% + 2 cc of
78 | strong Ammonia in solution
77 | Chgd 15 hrs @ 200 Finishgd @ 1100

5379	455	463	478							
78	453	481	475							
77	454	481	478							

Endurance

	56	57	108	109	160	161	212	213	264	265
5379	563	528	552	512	547	480	488	445	452	447
78	533	519	545	572	542	496	510	467	483	489
77	525	515	533	500	551	491	500	455	89	433

	316	317	368	369	420	421	472	473		624
5379	383	386	359	348	361	333	287	251	Broke Mid	215
78	419	433	430	420	413	403	312	300		272
77	388	396	392	367	367	362	258	233		200

	625									
5379	238									
78	252									
77	203									

Calipers

	Original	After 1st Run	Before Endurance
5477	102-97-95		132-114
76	99-97-98		128-118
74	101-98-97		134-117

5477 | 5 Mi Big Corrugations Reversed
76 | Perforations 200 atmos
74 | Charged & Discharged in 33%
Charged 15 hrs @ 200 Discharged @ 100

5477	453	507	567							
76	452	507	527							
74	452	495	539							

Endurance

	56	57	108	109	160	161	212	213	264	265
5477	578	567	528	533	452	480	363	382	292	323
76	532	577	495	548	492	500	333	400	318	361
74	528	595	495	533	418	451	381	378	306	333

	316	317	368	369	420	421	522	523	0	624
5477	265	267	245	238	233	220	227	232	Broke in half	160
76	288	292	267	267	263	267	253	267	Broke in half	200
74	297	286	253	267	257	260	220	217		155

	625
5477	195
76	207
74	173

Calipers

	Original	After 1st Run	Before Endurance
5481	99-97-95		123-108
80	101-95-97		122-112
79	99-96-92		125-109

5481 Dup of 5477 Except ch
80 " 250 Atmos
79 Chyd 15 hrs @ 200 Dischyd @ 100

5481	478	520	545							
80	440	498	527							
79	447	473	572							

Endurance

	56	57	108	109	160	161	212	213	264	265
5481	557	627	567	613	520	567	488	510	387	500
80	570	566	520	533	484	500	437	465	395	446
79	488	550	500	572	448	487	394	433	307	342

	316	317	368	369	420	421	472	473		524
5481	363	354	300	300	297	290	300	290	Broke Spring	257
80	365	353	295	292	290	281	277	252		213
79	300	292	267	260	258	248	232	240		188

	525
5481	270
80	245
79	198

Calipers

	Original	After 1st Run	Before Endurance
5486	96-92-92		116-101
85	94-92-90		113-105
84	95-92-95		118-106

5486 Dup of 5477
85 Except @ 300 atmos
84 Chgd 15 hrs @ 200 Porichgd @ 100

5486	456	497	530							
85	460	512	573							
84	447	497	527							

Endurance

	56	57	108	109	160	161	212	213	264	265
5486	515	553	530	550	515	523	513	485	427	477
85	547	637	578	613	495	558	467	467	477	433
84	518	533	523	533	510	520	517	500	451	8e

	316	317	368	369	420	421	472	473		624
5486	413	411	348	350	380	344	265	297	Pressure 1 hr	278
85	337	327	285	288	287	267	217	238	Pressure 1 hr	208
84	421	433	367	397	357	367	300	320		270

Co

	625
5486	308
85	278
84	300

Calipers

	Original	After 1st Run	Before Endurance
5491	92-105-102	102-106	105-105
90	96-108-105	104-107	107-103
89	92-104-104	99-105	106-105

491 | 5 Reg Wi 2170. Containing
90 | 3 gms Borax
89 | chg'd 15 hrs @ 200 Discharg'd @ 100

5491	477	493	503	510	505						
90	467	493	487	500	495						
89	450	490	496	495	490						

Endurance

	58	59	110	111	162	163	214	215	266	267
5491	533	522	545	512	537	487	487	448	467	462
90	535	574	542	520	537	482	482	444	449	445
89	528	510	540	500	528	478	467	433	433	433

	318	319	370	371	422	423	474	475		626
5491	392	400	383	367	364	350	265	347	Fresh 1st	225
90	383	391	373	363	360	351	283	256	2nd	233
89	367	367	347	325	320	296	233	222		197

	627									
5491	227									
90	250									
89	210									

Calipers

	Original	After ½ Run	Before Endurance
5522	93-105-103	103-108	104-103
21	91-103-104	100-104	101-102
20	91-104-104	101-106	103-107

5522 5 Rey Ni 21% containing
21 .3 grammes Carbonate Strontia
20 in each cell after assembling
rested 10 hrs.
Chgd 15 hrs @ 200 Dischgd @ 100

5522	484	465								
21	484	488								
20	487	495								

Endurance

	55	56	107	108	159	160	211	212	263	264
5522	533	518	545	537	533	482	492	447	415	462
21	532	533	542	510	533	482	483	450	467	462
20	533	522	547	510	544	483	483	440	453	455

	315	316	367	368	419	420	521	522		623
5522	382	385	367	347	364	333	273	248	Pack broke	228
21	390	400	377	364	364	371	287	265	Pack broke	225
20	391	397	388	364	367	348	387	260		233

	624									
5522	243									
21	245									
20	252									

Calipers

	Original	After 1st Run	Before Endurance
55-26	92-104-105	103-107	105-108
24	94-103-106	103-107	104-106
23	90-105-105	100-106	98-104

55-26 5 Reg Ni 7.1% Containing 3 grammes
24 Carbonate Cerium Each cell
23 After assembling rested 10 hrs.
chg'd 15 hrs @ 200 Discha'd @ 100

55-26	490	486								
24	485	491								
23	495	491								

Endurance

	55	56	107	109	159	160	211	212	263	264
55-26	542	510	540	500	533	481	475	443	450	453
24	527	513	525	488	508	467	472	433	433	433
23	522	505	500	483	497	452	447	411	413	419

	315	316	367	368	419	420	521	522		623
55-26	382	388	386	363	355	333	232	222	Broke 5-15 Reg Ni	182
24	367	379	377	363	343	322	232	212		183
23	362	367	357	333	317	245	190	192		115

	624									
55-26	200									
24	203									
23	132									

Calipers

	Original	After 1st Run	Before Endurance	
5562	93-104-104	102-106	104-105	
61	92-103-104	102-104	103-104	
60	92-106-105	98-107	102-105	

5562 5 Reg ni soaked, 6 hrs in half
61 print grain Alcohol on hot
60 plate @ about 125°F Then
Assembled with irons in 21%
chg'd 15 hrs @ 200 Dry chg'd @ 100

5562	467	482	494	498	497	503	506			
61	472	490	495	500	500	507	508			
60	464	477	494	493	496	500	505			

Endurance

	60	61	112	113	164	165	216	217	268	269
5562	543	523	547	513	542	491	500	462	465	487
61	552	529	550	517	521	490	500	465	466	487
60	547	522	552	517	550	500	500	462	467	488

	320	321	372	373	424	425	526	527		628
5562	400	410	405	389	383	352	150	147	Broke in 2 pieces	248
61	390	394	387	362	378	347	258	248	Broke in half	242
60	407	415	423	410	400	382	317	313		238

	629									
5562	237									
61	230									
60	260									

Calipers

	Original	After 1st Run	Before Endurance
5582	94-105-104	106-105	105-105
81	94-106-104	101-103	102-107
80	96-102-108	104-108	106-109

5582 | 5. Reg. mix. 21% containing
81 | 2 grams Antimoniate of Potash
80 | or sodium (400 mily each cell).
Chg. @ 15 hrs @ 200 Dischg. @ 100

5582	463	407	498	487	502	
81	458	507	497	483	500	
80	463	504	492	480	492	

Endurance

	58	59	110	111	162	163	214	215	266	267
5582	537	514	525	500	500	459	447	420	385	400
81	531	513	542	500	523	473	470	448	405	433
80	547	513	675	508	547	487	482	447	413	444

	318	319	370	371	422	423	474	475		626
5582	347	349	333	315	333	293	263	242	Trouble 2.75	207
81	367	367	358	345	353	319	276	253	2.80 [illegible]	223
80	367	377	352	333	346	318	282	253		195

	627
5582	233
81	242
80	227

Calipers

	Original	After 1st Run	Before Endurance
55-85	93-103-103	100-103	103-105
84	90-100-99	99-100	101-102
83	100-101-99	95-100	100-102

55-85 5 Reg. Ni. 21% with 5 grammes
84 provided Seal Glass through
83 150 mesh or newer sheets made by Dolby (5 grammes to each cell)
chgd 1.5 hrs @ 200 Discchgd @ 10.0

55-85	477	485	500	496					
84	467	480	491	488					
83	467	482	483	495					

Endurance

	57	58	109	110	161	162	213	214	265	266
55-85	538	517	557	500	500	450	450	400	367	348
84	503	482	500	457	442	400	377	345	300	257
83	532	570	550	500	507	460	457	390	358	314

	317	318	369	370	421	422	473	474		625
55-85	184	182	77	90	43	27	15	15	Tests Stopped	2
84	122	119	40	38	35	13	3	3	Tests Stopped	0
83	172	178	78	73	65	20	10	6		0

	626
55-85	2
84	0
83	0

Calipers

	Original	After 1st Run	Before Endurance
5591	97-107-108	103-106	107-107
90	96-107-106	103-106	107-106
89	96-105-106	103-106	102-106

5591 5 Ni in 21% Containing 1 gramme
90 Silenate of Potash or Soda per
89 cell

Chgd 15 hrs @ 200 Dischgd @ 100

5591	418	475	474	473						
90	493	492	482	485						
89	442	487	481	478						

Endurance

	57	58	109	110	161	162	213	214	265	266
5591	552	515	520	487	493	453	465	422	387	377
90	592	541	550	508	514	488	493	410	433	400
89	582	527	547	500	513	479	493	440	438	428

	317	318	369	370	421	422	533	534		625
5591	323	315	253	233	265	228	125	148	Broke 2 hrs Next Just	133
90	362	354	267	252	287	257	125	193		200
89	376	381	273	300	285	237	123	160		200

	626									
5591	143									
90	207									
89	206									

Calipers

	Original	After 1st Run	Before Endurance
5595	95-103-106	100-102	102-103
94	97-107-104	102-107	103-107
93	96-105-107	101-104	104-105

5595 5 Ry Ni 21% Containing
94 1 gramme Tellurate of Potassium
93 or Sodium per cell
Chg 15 hrs @ 200 Discharg @ 100

5595	464	460	459	458						
94	468	467	466	463						
93	462	456	452	453						

Endurance

	57	58	109	110	161	162	213	214	265	266
5595	530	500	500	473	473	447	490	444	317	463
94	557	515	507	483	467	465	465	448	400	393
93	537	508	497	480	452	451	460	422	383	377

	317	318	369	370	421	422	523	524		625
5595	325	320	233	210	147	143	130	137	Breakdown	53
94	333	328	233	210	157	157	145	143	Not full	100
93	319	312	233	200	165	133	145	137		80

	626									
5595	48									
94	98									
93	95									

Calipers

	Original	After 1st Run	Before Endurance
5610	96-106-105	102-105	104-105
09	92-104-106	98-105	102-106
08	94-106-104	103-107	105-106

5610 .5 Reg Ni 21% with 2 grams
09 Oxalic acid
08 Chyd 15 hrs @ 200 Dischyd @ 100
(400 mily Each Cell)

5610	460	502	488	481						
09	460	507	492	482						
08	460	500	467	482						

Endurance

	57	58	109	110	161	162	213	214	265	266
5610	529	523	543	507	515	475	490	451	442	418
09	552	523	533	507	515	480	500	464	462	446
08	533	515	530	500	502	473	497	454	448	435

	317	318	369	370	421	422	533	534	585	586
5610	377	380	347	312	340	295	185	187	Pinhole Fail	152
09	400	412	400	343	460	322	257	255	Pinhole Fail	200
08	387	397	392	350	367	325	253	227		207

	626
5610	186
09	210
08	237

Calipers

	Original	After 1st Run	Before Endurance
5616	95-107-105	105-108	101-105
15	90-101-105	100-105	101-105
14	95-106-105	103-108	106-107

5616 5 Rey ni 210% containing
15 3 grammes Formate of Potash or
14 Soda
Chyd 15 hrs @ 200 Dischy'd @ 400
600 Mfg Each. Cell

5616	465	507	503	500							
15	459	496	445	497							
14	465	509	505	520							

Endurance

	57	58	109	110	161	162	213	214	265	266
5616	549	527	533	508	516	489	514	467	462	445
15	558	532	533	508	516	488	498	467	450	433
14	558	533	543	513	526	482	498	467	462	447

	317	318	369	370	421	422	523	524		625
5616	400	405	400	367	367	322	333	322	Pinching off Nos Yield	193
15	388	392	392	350	367	325	353	353		360
14	389	392	367	333	367	318	277	360		222

	626									
5616	188									
15	254									
14	215									

Calipers

	Original	After 1st Run	Before Endurance
5620	90-101-98	94-100	96-100
19	94-105-104	102-107	104-106
18	93-106-106	101-105	104-104

5620 5 Reg. Ni - 21% with 3 grammes
19 Succinic acid free cell
18 Chgd 15 hrs @ 200 Discharged @ 100

5620	463	476	482	481						
19	484	485	487	486						
18	483	488	489	490						

Endurance

	57	58	109	110	161	162	213	214	265	266
5620	S.C.	492	525	490	500	465	485	437	433	400
19	559	531	553	577	530	492	525	470	482	457
18	567	540	550	577	523	495	500	472	462	477

	317	318	369	370	421	422	523	524	9	625
5620	367	342	400	333	367	320	262	258	Positive Not Ni	217
19	412	407	425	398	375	312	250	233		113
18	400	393	386	333	360	305	252	243		270

	626
5620	226
19	163
18	238

Calipers

	Original	After 1st Run	Before Endurance
5696	94-105-101	100-105	103-108
95	91-106-104	99-105	102-105
94	94-104-106	101-106	104-108

5696 5 Reg Ni 2170 Containing
95 1 gm clear Silica powdered
94 up to 1/8 + smaller to each cell
Chyd. 15 hrs @ 200 Drychyd @ 100

5696	470	482	478	489	490	489					
95	467	480	485	487	490	490					
94	464	478	485	488	490	491					

Endurance

	59	60	111	112	163	164	215	216	267	268
5696	511	513	538	495	504	473	492	443	442	425
95	518	515	515	485	496	458	475	437	433	412
94	538	510	530	498	516	473	498	448	444	433

	319	320	371	372	423	424	525	526		627
5696	388	378	367	343	367	330	178	200	Breaking Test	167
95	378	367	359	388	343	297	230	223		159
94	410	398	400	383	400	353	300	207		193

	628									
5696	185									
95	190									
94	193									

Calipers

	Original	After 1st Run	Before Endurance
5727	99-95-97		109-105
25	100-98-95		115-105
24	100-96-97		114-104

5727 5 Nickel Big Corrugations 300 atmos
25 Soaked 6 hrs in grain alcohol
24 then dried 2 hrs on heater
Run in 21% containing 2 grms per cell of Hypomelphite of soda or Potash
Chg'd 15 hrs @ 200 Discharged @ 100

	50									
5727	0	433	429	506	511	498				
25	0	479	502	506	507	485				
24	0	456	433	511	514	499				

Endurance

	59	60	111	112	163	164	215	216	267	268
5727	555	557	567	543	555	550	560	550	520	513
25	586	575	567	533	561	523	558	520	507	510
24	605	552	570	542	573	533	582	523	542	523

	319	320	371	372	423	424	475	526	Broke in 5 hrs	627
5727	482	480	478	467	467	443	350	333	Broke in 5 hrs	357
25	476	475	477	453	440	445	423	412		423
24	487	487	493	477	473	467	442	443		433

	628									
5727	353									
25	414									
24	414									

Calipers

	Original	After 1st Hour	Before Endurance
58 35	92-104-105	104-107	105-105
34	95-106-107	102-103	105-108
31	93-105-106	103-108	104-107

58 35 | 5 Ry Ni 21% Containing
34 | 3 grammes Carbonate Ammonia
31 | in each cell
Clyd. 15 hr @ 200 Dischyd @ 100.

58 35	275	383	432	450							
34	265	383	430	443							
31	289	417	458	477							

Endurance

	57	58	109	110	161	162	213	214	265	266
58 35	541	572	533	498	520	483	493	477	482	452
34	558	527	532	517	532	491	443	447	493	467
31	551	522	572	512	527	487	500	459	482	452

	317	318	369	370	421	422	473	474		625
58 35	421	410	423	400	385	363	263	257	Dischd 1.04 Hour	267
34	427	412	421	397	400	352	253	253		192
31	421	412	420	400	408	367	277	258		252

	626									
58 35	233									
34	200									
31	233									

Calipers

	Original	After 1st Run	Before Endurance
58 60	93-106-104	102-105	103-105
59	96-107-100	108-110	104-106
58	93-103-106	102-105	107-103

58 60 5 Reg Ni 21% Containing
59 2 grammes freshly precipitated
58 carbonate of Magnesia in each cell
chyd 15 hrs @ 200 Dischyd @ 100

58 60	467	482	476	476							
59	462	475	473	473							
58	457	470	470	468							

Endurance

	57	58	109	110	161	162	213	214	265	266
58 60	549	512	530	493	497	458	477	437	433	410
59	553	513	533	497	513	473	492	453	443	427
58	546	510	543	493	507	467	493	470	443	427

	317	318	369	370	421	422	523	524		625
58 60	386	367	353	327	328	297	340	233	Broken 7-19-[illegible] 7-20-[illegible]	167
59	395	387	378	317	367	328	213	300		183
58	397	383	378	348	359	327	300	300		290

	626
58 60	170
59	200
58	254

Calipers

	Original	After 1st Burn	Before Endurance
5:65	92-104-104	96-105	101-105
64	89-94-102	96-100	99-100
63	91-103-102	96-103	100-103

5:65 | 5 Mi. 2170 Containing
64 | 2 gms. Kaolin Each Cell
63 | Chyd 15 his @ 100 Dischyd @ 100

5:65	493	487	491	495	4					
64	493	488	489	494						
63	493	488	486	493						

Endurance

	57	58	109	110	161	162	213	214	265	266
5:65	486	460	343	317	200	233	167	147	100	100
64	492	457	348	324	248	222	183	167	115	107
63	508	473	395	497	291	300	212	196	137	123

	317	318	369	370	421	422	473	524		625
5:65	80	85	63	47	33	28	7	7	Probably 5 to 10% Water	0
64	90	93	63	47	42	20	8	8		8
63	95	100	67	47	45	23	12	12		5

	626									
5:65	0									
64	0									
63	3									

Calipers

	Original	After 1st Run	Before Endurance
59 15	94-104-106	100-105	99-103
14	94-107-104	105-107	101-106
13	94-99-105	98-100	96-98

5 ml 21% containing 3 gms
59 15 freshly precipitated carbonate
14 of Calcium each cell
13 Chg'd 15 hrs @ 7.00 Discharg'd @ 100

59 15	.503	502								
14	.498	475								
13	.493	488								

Endurance

	55	56	107	108	159	160	211	212	263	264
59 15	.543	548	577	530	542	510	543	491	467	450
14	.577	539	555	520	532	499	525	472	447	430
13	.565	533	553	518	542	500	528	485	482	450

	315	316	367	368	419	420	521	522		623
59 15	367	342	347	310	340	297	300	58	Recal. 315 Mon. Not.	192
14	366	333	333	300	318	300	297	255		173
13	367	360	347	312	373	320	297	257		180

	624
59 15	225
14	125
13	215

Calipers

	Original	After 1st Run	Before Endurance
59 69	93 · 103-104	100-105	105-105
68	92 · 101-101	101-102	105-104
67	93 · 104-104	101-104	103-104

59 69 | 5 Rey Mi actually boiled 1 hr
68 | in 1 quart of 1% K.O.H.
67 | Run in 20%.
Chgd 15 hrs @ 200 Discharged @ 100

59 69	473	466	500	497						
68	269	490	508	497						
67	464	490	488	492						

Endurance

	57	58	109	110	161	162	213	214	265	266
59 69	562	533	542	515	527	492	493	477	445	420
68	533	517	542	513	532	492	520	465	492	482
67	573	532	542	510	527	487	498	467	445	445

	317	318	369	370	421	422	473	524		625
59 69	387	365	360	200	373	317	297	263	Final Reading	183
68	447	441	470	437	440	420	388	380		350
67	387	365	358	333	367	317	285	188		223

	626
59 69	138
68	320
67	333

Calipers

	Original	After 1st Run	Before Endurance	421 ≈ 1 m
5993	88-99-101	95-99	97-100	113-110
92	92-102-101	99-104	101-104	119-115
91	97-103-104	101-102	103-105	115-110

5993 5 ml 2170 Containing
92 25 Milligrams Sulphide of Potassium
91 in each cell
Chyd: 15 hrs @ 200 Dischgd @ 100

5993	480	490	516								
92	473	494	500								
91	495	495	500								

Endurance

	56	57	108	109	160	161	212	213	264	265
5993	557	532	545	522	540	496	513	492	487	488
92	532	532	542	515	542	495	560	495	492	490
91	533	532	553	528	550	492	542	510	503	510

	316	317	368	369	420	421	522	523		624
5993	462	452	443	438	459	430	378	367	Broken in 10 hrs	350
92	461	456	446	417	430	430	395	393		358
91	472	477	483	453	473	452	415	410		392

	625
5993	310
92	352
91	367

Calipers

	Original	After 1st Run	Before Endurance	421 2d run
5796	90-102-100	96-104	98-102	114-100
95	94-102-102	101-105	102-105	117-113
94	93-100-103	100-101	102-102	117-111

5796 | 5 ni 21% Containing
95 | 50 Milligrams Sulphided Potassium
94 | in each cell
Chgd 15 hrs @ 200 Discharged @ 100

5796	477	500	512						
95	477	500	515						
94	467	475	490						

Endurance

	66	57	108	109	160	161	212	213	264	265
5796	561	539	553	528	550	526	527	493	498	492
95	557	545	552	527	560	526	572	468	507	487
94	531	528	525	500	524	498	500	492	485	462

	316	317	368	369	420	421	472	523	0	
5796	462	443	483	483	457	429	458	387	Practically not Hot Well	363
95	473	454	493	497	462	453	423	413		331
94	450	428	460	470	433	430	383	383		315

	625								
5796	347								
95	327								
94	285								

Calipers.

	Original	After 1½ Run	Before Endurance	4½ to 5 mm
6001	90-100-99	96-102	103-103	112-116
00	92-102-100	98-100	101-102	118-111
5999	93-102-104	99-103	102-107	119-118

6001 5 ml 2.0% Contain
00 .125 milligrams Sulphide of
5999 Potassium in each cell
chgd. 15 hrs @ 200 Dischgd @ 100.

6001	484	493	492							
00	487	497	500							
5999	495	495	498							

Endurance

	56	57	108	109	160	161	212	213	264	265
6001	531	527	532	512	531	508	498	472	462	452
00	533	527	542	515	533	514	507	490	485	480
5999	548	533	550	527	548	522	517	492	489	487

	316	317	368	369	420	421	522	523		624
6001	422	390	433	483	[illegible]	407	432	333	[illegible]	323
00	453	433	460	473	420	434	417	410		392
5999	462	439	477	490	433	438	423	408		356

	625
6001	288
00	363
5999	348

Calipers

	Original	After 1st Run	Endurance	421st max
6006	94-102-104	101-103	102-103	113-115
05	92-101-104	95-100	103-104	115-114
04	94-100-106	99-99	105-103	120-11[illegible]

6006 | 5 hr 21% Containing
05 | 250 Milligrms Sulphide of
04 | Potassium in each cell
chgd 15 hrs @ 200 Discharged @ 100

6006	482	482	487							
05	483	498	500							
04	482	493	493							

Endurance

	56	57	108	109	160	161	212	213	264	265
6006	527	527	533	508	568	507	507	483	478	478
05	528	532	544	520	545	512	513	487	485	479
04	533	527	533	511	531	507	497	466	479	477

	316	317	368	369	420	421	472	473	524	525
6006	452	432	483	483	462	450	450	442	442	433
05	449	428	467	477	437	428	392	382	382	367
04	449	427	467	467	428	427	392	382	382	359

	625
6006	412
05	338
04	333

Calipers

	Original	After 1st Run	Before Endurance	421 [illegible]
60 13	92-103-102	101-103	105-105	124-114
12	94-104-105	101-105	107-108	117-113
11	90-102-101	97-102	102-105	115-114

60 13 5 ml 21% Containing
12 500 Miligrams Sulphide of
11 Potassium in each cell
chgd 15 hrs @ 200 Dischgd @ 100

60 13	413	493	497							
12	467	492	497							
11	480	492	493							

Endurance

	56	57	108	109	160	161	212	213	264	265
60 13	547	537	543	516	531	503	493	470	467	460
12	567	537	546	508	523	490	492	460	456	437
11	533	527	526	500	523	498	490	462	471	462

	316	317	368	369	420	421	522	523		624
60 13	426	379	433	425	390	360	315	387	Broke Wire	387
12	467	386	433	400	343	378	346	312		327
11	432	411	467	478	437	447	407	400		350

	625
60 13	361
12	312
11	342

Calipers

	Original	After 1st Run	Before Endurance
6018	93-107-104	99-106	101-103
17	93-105-101	100-105	100-102
16	93-102-106	100-104	100-101

6018 | 5 Reg Ni 21% Containing
17 | 2 grammes Succinic Acid
16 | in each cell.
Chg'd 15 hrs @ 2.00 Disch'd @ 100

6018	432	464								
17	427	447								
16	434	469								

Endurance

	55	56	107	108	159	160	219	220	263	264
6018	537	500	533	492	517	488	483	442	433	437
17	517	492	522	480	497	467	445	400	370	350
16	533	517	533	493	509	475	457	421	429	416

	315	316	367	368	419	420	521	522		624
6018	390	369	362	350	333	233	88	90	Pack broke	41
17	317	310	280	278	250	168	33	50	Test stopped	28
16	340	333	267	267	220	127	27	38		16

	625									
6018	53									
17	36									
16	33									

Calipers

	Original	After 1st Run	Before Endurance
6038	92-103-103	97-102	101-104
37	94-105-103	100-105	102-104
36	92-106-105	98-106	102-106

6038 5 Req ni 2170 Containing
37 2 grammes Barium Sulphite
36 in each cell.
Chgd 15 hr @ 200 Dischgd @ 100

6038	478	483	504	500						
37	478	483	499	497						
36	478	483	498	497						

Endurance

	57	58	109	110	161	162	213	214	265	266
6038	567	532	554	510	519	492	485	478	455	440
37	561	538	551	507	519	492	483	473	455	442
36	552	534	551	511	527	492	486	473	456	438

	317	318	369	370	421	422	473	474	Broke in 474	625
6038	400	384	400	400	348	320	277	258		273
37	397	377	396	397	344	322	292	263		294
36	383	380	397	392	347	327	278	258		288

	626
6038	232
37	252
36	249

Calipers

	Original	After 1st Run	Before Endurance
6053	93-103-103	99-103	104-104
52	93-103-105	100-103	103-105
51	94-103-105	102-106	105-105

6053 | 52 | 51

5 ni 210% Containing 10 milligs
Floor of sulphur in bottom
of cell
Chgd 15 hrs @ 200 Disch'd @ 100

6053	480	485	503	500	495	495				
52	473	480	497	492	497	495				
51	483	485	510	505	497	495				

Endurance

	59	60	111	112	163	164	215	216	267	268
6053	533	0	531	472	450	457	440	425	408	400
52	537	517	531	494	511	480	460	412	427	413
51	537	532	560	513	531	495	483	478	455	443

	319	320	371	372	423	424	525	526		627
6053	343	323	300	277	263	233	262	247	Pulled to 1.000	S.C.
52	393	333	352	73	308	281	253	230		173
51	417	367	361	333	315	285	257	280		297

	628									
6053	133									
52	280									
51	257									

Calipers

	Original	After 1st Run	Before Endurance
6056	92-102-103	98-102	105-10X
55	93-102-103	100-103	106-106
54	94-102-105	103-102	105-10X

6056 5 Ni 21% Containing
55 30 milligrams Flow of Sulphur
54 in bottom of cells.
Chg'd 15 hrs @ 200 Discha'd @ 100

6056	474	487	497	508						
55	478	493	492	510						
54	473	487	483	500						

Endurance

	57	58	109	110	161	162	213	214	265	266
6056	553	531	552	512	533	497	487	447	437	434
55	563	533	556	513	527	492	467	447	428	427
54	545	524	538	507	521	492	467	450	437	433

	317	318	369	370	421	422	473	474		525
6056	384	349	355	397	313	282	245	233	Broke with Flow Wd.	254
55	373	333	333	333	307	278	247	245		245
54	383	347	361	353	318	283	253	247		262

	626									
6056	232									
55	197									
54	225									

Calipers

	Original	After 1st Run	Before Endurance
6063	94-103-102	99-104	104-104
62	92-99-102	98-100	101-103
61	93-103-102	99-104	104-106

6063 5 ml 2.1% Containing
62 60 milligms. Flour of Sulphur
61 in bottom of each cell
chgd 1.5 hrs @ 200 Discchgd @ 100

6063	472	487	487	500							
62	467	486	485	497							
61	467	492	493	500							

Endurance

	57	58	109	110	161	162	213	214	265	266	
6063	567	530	550	506	537	492	472	435	428	425	
62	550	522	537	497	521	492	467	430	428	416	
61	544	522	537	496	512	478	467	428	427	417	

	317	318	369	370	421	422	473	474	[illegible]	525	526
6063	393	357	382	348	323	380	353	348	[illegible]	195	120
62	377	346	367	357	325	355	344	328	[illegible]	253	127
61	383	345	355	348	315	350	345	333	[illegible]	118	125

6063											
62											
61											

Calipers

	Original	After 1½ Min	Before Endurance
6066	92-102-102	98-102	100-103
65	92-104-103	99-102	104-104
64	91-100-104	101-105	105-107

6066 | 5 Mi 2% containing
65 | 120 milligrms. 7 hours of Sulphur
64 | in bottom of cells.
Chg'd. 15 hrs @ 200 Discharg'd @ 100

6066	467	489	480	498						
65	473	493	490	578						
64	473	492	490	505						

Endurance

	57	58	109	110	161	162	213	214	265	266
6066	552	522	541	498	508	477	460	423	438	418
65	574	529	525	197	S.C.	505	477	433	S.C.	400
64	567	533	543	506	527	490	472	433	433	418

	317	318	369	370	421	422	473	474	525	526
6066	332	348	332	367	350	300	277	248	Discharg'd Not Chg'd	293
65	393	347	385	367	350	320	270	270		328
64	390	353	367	357	333	310	277	259		326

	626
6066	247
65	278
64	253

Calipers

	Original	After 1st Run	Before Endurance	422nd min
7070	92-104-104	101-105	103-106	118-110
69	92-100-104	102-102	104-104	120-117
68	90-101-101	100-103	101-105	112-110

7070 | 5 Reg Ni 21% Containing
69 | ni each cell 100 Milligrams
68 | of precipitated Ferric hydroxide
Chg'd 15 hrs @ 200 Discharged @ 100

7070	487	489	495	500	500					
69	488	486	495	500	500					
68	489	485	491	500	500					

Endurance

	58	59	110	111	162	163	214	215	266	267
7070	570	539	566	523	552	521	520	490	504	500
69	556	533	556	516	546	515	517	482	479	485
68	524	521	542	509	530	497	495	463	477	467

	318	319	370	371	422	423	474	475		626
7070	462	442	495	483	453	447	428	423	Broke at 626	387
69	447	431	467	463	439	427	405	395		398
68	432	411	456	450	398	388	352	333		330

	627									
7070	357									
69	318									
68	300									

Calipers

	Original	After 1st Run	Before Submissed	422 = mm
7077	91-102-101	100-104	101-105	113-114
76	90-100-102	98-103	104-102	113-110
75	92-102-106	101-107	102-104	116-115

7077 | 5 Rey in 21% containing
76 | 100 milligrms Ferrous hydroxide
75 | in each cell.
Use Ferrous Sulphate in solution with minimum amount of water to dissolve it + pour into cells making the precipitate in the cell The Sulphuric will do no harm
Chgd 15 hr @ 200 Dischgd @ 100

7077	477	477	497	500						
76	478	491	500	520						
75	467	478	497	497						

	57	58	109	110	161	162	213	214	265	266
7077	532	532	532	500	525	491	492	456	472	467
76	562	529	561	520	562	525	537	500	510	500
75	528	495	533	497	521	483	485	450	472	530

	317	318	369	370	421	422	523	524	625	626
7077	438	412	456	447	413	400	356	333	330	300
76	466	443	437	483	458	447	425	403	407	367
75	430	408	455	450	425	412	424	390	397	367

Not finished

Calipers

	Original	After 1st Run	Before Endurance	420th run
7168	92-104-105	99-105	102-105	114-111
67	91-103-103	99-103	100-104	116-117
66	93-104-105	101-106	103-106	113-110

7168 5 Reg ml 21010 Containing
67 250 Milligms Antimonate of
66 Potassium or Soda in each cell
Chg'd 15 hrs @ 200 Discharged @ 100

7168	483	489								
67	484	490								
66	484	490								

Endurance

	55	56	107	108	159	160	211	212	263	264
7168	547	529	545	510	543	509	510	420	483	472
67	554	529	561	517	567	530	530	483	505	487
66	532	515	533	499	543	500	502	467	483	478

	315	316	367	368	419	420	471	472		523
7168	448	423	473	477	460	430	428	409	7168 Pull	408
67	465	442	494	483	355	446	438	415	67 Pull	382
66	453	431	486	477	433	423	354	346	66 Pull	347

	624									
7168	395									
67	362									
66	338									

Calipers

	Original	After 1st Run	Before Endurance
.7175	93-105-106	100-106	104-105
.74	90-100-101	97-102	99-102
.72	90-102-100	97-102	102-103

.7175 .5 Reg Ni 2% Containing
.74 500 Milligrms Antimonate of
.72 Potash or soda in each cell
Chg'd 15 hrs @ 200 Discha @ 100

.7175	486	508								
.74	482	490								
.72	482	490								

Endurance

	55	56	107	108	159	160	211	212	263	264
.7175	572	537	539	512	526	497	498	468	475	467
.74	546	532	537	526	537	493	493	463	477	467
.72	546	529	550	512	546	510	511	485	488	482

	315	316	367	368	419	420	471	472		623
.7175	437	410	420	433	362	318	397	393	Fully Charged	268
.74	438	415	455	445	413	400	377	360		329
.72	461	442	487	487	453	443	408	420		387

	624
.7175	323
.74	313
.72	373

Section #III Index

Acid Oxalic 5610-08
" Tannic 5610-18, 6018-16
Alcohol Sub. 5962-60
" + Hyposulphite soda 5727-24
Ammonia 5377-77
" Carbonate 5[illegible]5-31

Barium Sulphite 6038-36
Baryta 5491-89

Calcium Carbonate 5915-13
Carbon " 5826-23
Coagulations 55 stick 5477-74
5451-79, 5486-84

Ferric Hydroxide 7070-68
Ferrous " 7077-75

Black Powd. Lead 5585-83

Hydrogen Peroxide 5243-41

Kaolin 5865-63

Magnesium Carbonate 5860-58
Mica 5696-94

Nickels Boiled in 1%
KOH 5969-67
Nickels Green Hydrate hot
2-1% 5263-61

Potassium Antimonate 5582-
7168-66. 7175-72
" Formate 5616-14
" Sumpf with out Barium
treatment 5325-23
" Selenate 5591-89
" Stick by Lime 5238-37
" Sulphide 5993-91. 5996-94
6001-5999. 6006-04. 6013-11
" Tellurate 5595-93

Strontium Carbonate 5522-20
Sulphur 6053-51. 6056-54
6063-61. 6066-64

Additions to Section II

The following cells have been added to Section II

25 B. A prickle from old endurance coll # 25 B after 1301 runs treated as per # 2271 J.W.A.

Endurance

	568	569	620	621	622	623	624	625		976
25 B	283	248	266	267	217	240	163	172	3 [illegible] [illegible]	229

	977
25 B	251

Bad curve.

9343.— Pocket from old cell #27
treated according to # 22-85 J W A
Run up in 21% HOH

9343										
		59	60	111	112	163	164	265	266	
9343	231	253	255	290	203	217	177	175	3 runs 21% HOH	
		367	368							
9343	245	263								

9304 Pocket from old endurance cell #27 treated as per # 2281. J.W.A.

9304	0	177	245	246	332	378	388	402	410	417	

9304	422										

Endurance

	62	63	114	115	166	167	268	269			
9304	283	332	307	319	203	217	153	187	7 cells 9294	2 cells dupl. in	

	320	321									
9304	250	272									

93002	These reg mix 3.2 cake
01	crimped @ 100 Coring @ 150
00	Treated as per # 22812 JWH.

93002	[illegible] wrong	433	500	505	512	518	518	522	522	
01	520 [illegible]	532	532	540	542	548	552	553	556	
00	[illegible] wrong	327	500	501	506	512	511	513	513	

93002	523	523								
01	552	547								
00	518	512								

Endurance

	62	63	114	115	166	167	268	269		
93002	545	543	547	542	520	553	500	515	3 hrs	
01	58	577	568	562	550	573	458	500	710	0 RO/H
00	532	528	532	533	530	532	517	505	Not	in

	370	371								
93002	548	538								
01	573	577								
00	553	549								

Calipers

	Original	After 1st Run	Before Endurance	
8550	90-101-99			
49	94-103-103			
48	93-104-104			

8550 Group of 3 reg. tin in clamps
49 for Endurance 3.2 gm in 3370
48

@ 500

8550	467	633	737	706	736	308	333	727	722	736
49	477	587	673	642	675	267	292	658	653	655
48	497	612	700	662	708	292	300	687	689	692

8550	728	706	732	730
49	667	643	669	668
48	707	674	697	708

Endurance

	65	66	117	118	169	170	271	272	373	374
8550	650	52	412	570	510	550	390	383	Broke in clamp	300
49	526	52	442	575	400	400	210	203		190
48	700	667	552	660	583	588	333	323		258

	344									
8550	313									
49	187									
48	260									

Calipers

	Original	after 1st Run	Before Endurance	
8547	90-101-100			
46	89-100-101			
45	91-101-105			

8547 Group of 3 Rey. No. in clamps for
46 Endurance 3.2 gm in 21°C
45

							@500				
8547	508	515	552	529	533	408	417	515	524	532
46	515	520	535	530	533	467	475	533	586	533
45	510	518	543	542	547	458	483	537	542	542

8547	525	521	565	520						
46	527	522	533	529						
45	526	522	532	537						

Endurance

	65	66	117	118	169	170	221	222	273	323
8547	494	481	462	470	433	477	423	393		467
46	500	487	467	487	495	500	500	447		437
45	497	486	463	483	428	478	417	417	Broke 274 Not quite	492

	324									
8547	453									
46	440									
45	477									

	Original	After 1st run		107th run
9299	104-104-107			112-10[illegible]
98	102 101-100			109-10[illegible]
97	104-105-105			113-111

Note · 9297 is burn voltage also.

9299 Three Rey his 3.2 gm
98 smooth press 100 Corrug 150
97 Treated according to # 2280 JWA,

9299	542	549	547	547	548	552	552	553	552	548
98	560	556	550	546	547	552	550	550	545	543
97	565	563	562	551	553	560	557	558	555	553

9299	547									
98	543									
97	555									

Endurance

	62	63	114	115	166	167	268	269		370
9299	547	544	525	533	530	540	497	485	Jumping to 485	530
98	538	533	517	520	527	537	467	472		495
97	549	545	532	533	530	527	533	333		523

	371									
9299	513									
98	466									
97	533									

Notebook, N-04-11-02

November 2 1904 –

New experiments started at Laboratory in our new test room to discover why nickel elements in some cases lose their amp capacity after being in use and also to discover a remedy that is practical and commercial.
To investigate the cause or causes of swell and also why as high an ampere capacity cannot be got out of plates in 21% KOH as is obtained at times in 33% KOH.

(4000) Test No.

Mix. 4000.

The 1st one by mistake not passed up from press before note

$Ni(OH)_2$ large stuff from factory crushed and screened through 30 mesh screen without making any more fines than possible. 8 grams Reg fine graphite 2 grams. – 3 grams molasses – mixed by finger + thumb in Evaporating dish not fully covered to ascertain if its necessary to thoroughly cover it. Mix dried on plate + powdered by finger to separate the particles stuck together. The put in 3.9 of the dry mix + used plain die – press 50 times. Then put in ~~[illegible]~~ distilled water set on hot plate 36 hours to percolate sugar out. Then put cup on ~~[illegible]~~ Thick paper + thoroughly dry – Then press, with smooth die 100 at + Corrugate at 75. –

Charge 100 at 15 hours, using 2 fd which have been chgd 24 hours new KOH, afterwards chg 60 hours at 100 rate –

(4001)

Mix No 4001

Same as 2000 Except worked longer with fingers to get it thoroughly graphite covered, flat probably 50 ohms,

Chg + discharg same as 4000

(4002)

4002

Same as 2000 but with 3 1/2 grams molasses -

Chg + discharg same as 2000

(4003)

4003

Same as 2000 but with only 2 1/2 grams molasses but worked warm to see if minimum molasses will answer

Chg + discharg same as 2000

460 T. Volt Volts Stamp Curve

It looks as if with Virgin 1 part Recovered to 1 part fine flake or proportions which will make 6 out all normal graphite Combine the Recovered to make bulk or surface Contact with the grain particles the flakes to Connect it inside the Cup —

4006 as 6 out shows that internal Resistance can be had by not making Contacts all around the grain nuclei particles with the cellular had fine graphite was recovered —
4005 had 1 cc Recovered & Chg showed Resistance due to insufficiency in Contacts to reach Cup which a mixture of Coarse graphite Recovered,

(4004)

4004
Same as 2000 but with Reg Coarse graphite,
Chg & discharge same as 2000

(4005)

4005
Same as 2000 except Recovered graphite,
Chg & discharge same as 2000

(4006)

4006
Same as 2000 except 1 gram Coarse 1 gram Recovered graphite.
Chg & discharge same as 2000

* Looking under microscope with good light it is seen that all of the mixes from 2000 to 2009 were not worked by the hand long enough to cover all the particles, about 75% probably covered. next lot work longer & possibly ~~[illegible]~~ mixture made a little thicker so it will be more sticky. The only way to work the mix is by twisting action between thumb & first finger. It will require a peculiar mixer to do this.

All the pockets from 2000 to 2009. were soaked 24 hours in distilled water it was seen that lots rust formed, there was 2 changes of distilled water finally one more change of control made with one slick of KOH in it this 12 hours water clear, Total 36 hours

(4007)

4007
Same as 2000 except 7 grams $Mn\ OH_2$ + 3 grams Coarse graphite
Chg & dusting same as 2000 Lane

CO

(4008)

4008
Same as 2000. except 7 grams $Mn\ OH_2$ + 3 grams fine graphite.
Chg & dusting same as 2000 Lane

CO

(4009)

4009
Same as 2000 except 1/2 grams Coarse and 1/2 fine graphite.
Chg & dusting same as 2000 Lane

CO

* finished above
4:15 am -

4006 is best of those preceding

All Nos from 2010 to 2037
work on week Saturday 3 am

2010 – Centre 98 edge 117+108 (4010)

Same as 2006 – make 2 grids with, 25 smooth die pressure – treat as 2000 – 2 grids 100 pressure smooth die, before soaking –

Chgd dwelling same as 2038 $10\frac{1}{2}$ Done

21/1 Centre 95 Edge 106+109
/15 97 " 109+118

(4011)

4011 – Done

Same as 2001, work graphite small covered under Mirror – press 100 Corrugate 7/5 – then soak 24 hours warm Water & put on test, there is to determine if light pressure 24 hours soak, drying & then Rig smooth & Cor die as previously

Chgd dwell same as 2038 21/0

Done

A = Centre 126 Edge 119+117
B = " 108 " 120+116

2012 (4012)

Same as 2001. except 1 lb. 3 grms sugar to evaporated down to thicker & more sticky before using - + thoroughly Cover, smooth press 50 atmos

2013 Done (4013)

Same as 2001. Except ~~ground to~~ Nickel to be all ground to pass. 20 mesh - smooth press 50 at

Chg + deshy same as 2038 21/1

A = Centre 101 Edge 114 & 110

B = " 99 " 108 & 113

2014 Done (4014)

Same as 2001 Except nickel ground to pass 60 mesh

Flat press 50 at.

chg + deshy same as 2038 21/1

A = Centre 98 Edge 109 & 110

B = " 95 " 105 & 108

4015 Done

Same as 2001 except 9 of Ni + 1 of fine graphite, well mixed to pass it can be ground so micro. will not show grain / can differ Molasses & work hot / flat press 50 atmos

Chg + desch by same as 2038 21/1

A Centre 98 Edge 110 × 113
B " 98 " 110 × 113

4016 Done

Same as 2001 except 6 nickel + 4 fine graphite flat press 50.

Chg + desch by same as 2038 21/1

A Centre 94 Edge 105 × 109
B " 95 " 106 × 106

4017 Done

Same as 2001 except all nickel passed through 100 mesh, 4 grms molasses

Chg + desch by same as 2038 21/1

A Centre 91 Edge 105 × 101
B " 92 " 103 × 107

4020 A 420 mah
4020 B 130 mah

This shows pressure too great
One turned up & the other on account
of crop or swelling Conduct, its in
the Corrug that high pressure bad, as 4019
gave 4.95 & dup the same, Corgtg prevented
flow ??

This [illegible] [illegible] [illegible] [illegible] get out
when pressed hard at first & [illegible]
[illegible] [illegible] instead of 50 at on
1st press before soaked of 15 or even
15 [illegible] [illegible] [illegible]
The dup was 3 times better

~~2018~~
~~Same as 2001 Except Sugar instead of Molasses,~~

4019 Done
Same as 2001 except final press
smooth die, 150 Corrugating 100
chg & dischg same as 2038 21 1/2
A Centre 94 Edge 107 & 103
B " 94 " 106 & 108

4020 Done
Same as 2001 Except final press
100 smooth die, 150 Corrugtg,
chg & dischg same as 2038 21 1/2
A Centre 103 Edge 112 & 108
B " 102 " 109 & 109

4021 Done
Same as 2001 but soaked in
Water on hot plate 48 hours.
chg & dischg same as 2038 21 1/2
A Centre 99 Edge 110 & 111
B " 97 " 110 & 112

~~2022~~

Same as 2001 but Nickel ~~cells~~ through 20 mesh

4023

Same as 2001 except cups have brass side out.

~~4024~~ 2018

Same as 2001 except of Ca dry to be finger crushed with ~~[illegible]~~

9 mixed Molasses with NaOH first, but had put in 9 pts Extra Molasses Twas too dry — Chrysoidine same as 2038
A Center 192 Edge 105 v 101
B " 97 " 108 v 111

4025

Same as 2001 but mixed of Molasses use Conc Carb Ammonia ~~[illegible]~~ Syrupy —, A center Edge
B " "

This shows Excess Molasses
bad—

#026
Reg mix 3:2 in pockets plated
.005" thick

#027
Reg mix 3:2 in pockets plated
.005" thick burns outside

#028
Same as 2001 in pockets plated
.005" thick —

#029 Done
Same as 2001 except 4½ grams
Molasses thickened —
Charged by same as 2038
21%

A Center 90 Edge 106 & 104
B " 92 " 108 & 110

* The one put in 33% + run swelled, but gave poor amp Cap
Colloidons one reversed in 33% 15 hours then put in 21 + run gave 6 76. to Volt + the swell on 3rd run less than 20
The only Explanation is that reversing in 33% takes something out or it softens the KOH + permits the Mix to flow - ordinarily the one run in 33 slowly have shown high amp Capacity
Both had Molasses

* 4032 - poor
Big Swell-

4030 Done
Same as 2001 Except all the graphite screened out finer than 40 mesh
Chg + discharg Same as 2038 21%
A Center 98 Edge 105 + 108
B " 100 " 110 + 114

4031 Done
Same as 2001 Except use Coarse graphite all finer than passes through 30 mesh screened, + grams Molasses
Chg + discharg Same as 2038 21% KOH
A Center 94 Edge 105 + 109
B " 94 " 103 + 107

4032 Done
Same as 2001 Run in 33% KOH
Chg + discharg Same as 2038
A Center 97 Edge 107 + 112
B " 101 " 110 + 117

4033 Done
Same as 2001 Run in 10% KOH.
Chg + discharg Same as 2038
A Center 96 Edge 109 + 106
B " 97 " 109 + 113

*

2037	2015
2036	2014
2035	2013
2034	2011
2033	2010
2032	
2031	Were finished
2030	3 am Thursday morning
2029	Stick Rott always great for
2021	at 12 o'clock changed
2020	water, at 8 pm
2019	Changed water —
2017	
2016	

all these went on
Wash Thursday morning
3 am —

A Cutter 100 Edge 113 x 108
B " 99 " 111 x 110

2034 Lane

Same as 2001, (Reversed) half 15 hours before running in 21% —

~~Chg-Duchy Same as 2034 Except the~~

~~was changed to Duchy Rott~~

New Rott - Chg 100 water 15 hours then put with the previously chg 24 hours therefore run 100 feet 10 hours 595 to 4 5 min 595 " "

2035 Lane

Same as 2001 Reversed half 15 hours 33%

586 to 4 5 min
572 to 4 " "

Chg-Duchy - Same as 2034 Except the 33% —

A Cutter 95 Edge 108 x 105
B " 99 " 109 x 109

2036 Lane

Same as 2001 Reversed half 15 hours in 5%

428 to 4 5 min
425 to 4 5 min

Same as 2034 Except the 5%

A Cutter 96 Edge 109 x 108
B " 101 " 111 x 109

2037 Lane

Same as 2001 Reversed half 15 hours in 1/2% Rott.

419 to 4 5 min
399 to 4

Chg-Duchy

Same as 2034 Except the 1/2% Rott

A Cutter 98 Edge 109 x 110
B " 99 " 114 x 108

Remarks 4039 to
4044 - not [illegible] 24 hours
[illegible]

Indu 96 Edge 1104.13
95 " 1114.12
A
B
Done

4039
Same as 2001 but with 4 grams
sugar - Graphite put in first
with Sugar, after Graphite
Coated [redacted] NaOH put in
works made better [redacted]
Coated -
worked dry [illegible] Coated
To be reversed hot in 5% KOH 50 milamps
24 hours. Then changed 100 rate 15 hours
[illegible] 2039
Done

4038 -
Same as 2001 but 4 grams Neatness
Graphite + milamps put in first +
work + wicked put in afterwards
Covered it well - [redacted]
fine graph 95% Coated
to be reversed hot in 5% KOH for
24 hours + then changed 200 rate
15 hours + discharged with 2 ohms
previously Charged 24 hours
New KOH Then after charge
100 10 / hours

A - Entre 96 Edge 1074.109
B - " 94 " 1064.109

CD

#040 Done

Same as 2001 except 4 grams
Molasses, graphite & molasses
mixed together first, press 100
plain die, ~~[illegible]~~ corrugate
75 — fine graf

Chg & check chg same as 2038

A center 87 edge 107 & 109
B " 96 " 105 & 106

#041 Done

~~Same as 2001 except 4 grams~~

~~Mix~~ 7 grams nickel 3
grams fine graft 4 molasses
Mix graphite & molasses first,
50 at smooth die, dark —
afterward 100 smooth 75 —
Corrug —

Chg & check chg same as 2038

A center 87 edge 103 & 104
B " 96 " 105 & 110

CO

2042 - Done

7 grams Nickel 3 grams Graphite, ~~[illegible]~~ 4 grams Molasses
Mix up fine & Molasses paste
100 Smooth Die 75 Corrug
Soak
Chg & dressing Same as 2038

A Center 8% Edge 106 & 108
B " 90 " 102 & 103

2043 Done

Same as 2042 but after soaking dry & ~~[illegible]~~ re corrugate 75 atmos,
Chg & dressing Same as 2038

A Center 89 Edge 107 & 107
B " 90 " 105 & 107

CO

4044 Done

7 grams Nickel 3 grams ferro,
graphite 4 Mix the graphite & nickel
first, then only press the stuff
by fingers just twist enough
to make an intimate mix without
covering nickel entirely with
abrasive graphite.
Didnt twist but just gave a
pressing sliding motion
on bottom of dish just
like our mixer - It works
fine covers well see very
little green flakes are
not broken

Chg to dashes same as 2038

A Center 93 Solo L 108 & 109
B " 92 " 109 & 109

CD 354 to V 2nd
354 "
335 "
348 "

4045 Dunc

Loose pockets, pressed with Rubber, tight on pockets at glove. Red gauntlet by Rogers — No corrugating used or smooth [illegible] put it in grid. Loose not pressed at face — Genuine with Rubber was Regulation pressure they gave it. GR —

[illegible]

[illegible]

[illegible]

4046 — Dirt

4 pockets from G.B.S. Ni
pleith, new outside pocket
put on ~~[illegible]~~ of Corrugated
75 out,

CO

1 pocket shows no changes
that there is a resistance somewhere
also the other 3 shows slight
[illegible] Resistance
will come back to normal
300 to Volts. It looks as
if there was some Res. at the
surface of the pocket

~~169~~ Done

4047 Reg mix Reg pyrochloric
3.2 mix bro — 100 smooth 75 Con
Reversed 15 hours at 100 ma
in 33% at 160 Volts.
Disembled with Reg 2 grams
+ put in 21% chlorine 2 15
hours, discharge 100,
Ave - cal - Cut, 82 chg 99 - 101

465 1st
479 2nd

4048 Same as 4047

455 1st
470 2nd

4049 Same as 4047

465 1st
481 2nd

Done

4050 Same as 4047

465 1st
483 2nd

4051 Same as 4047

345 1st
373 2nd

4052 Same as 4047

458 1st
469 2nd

Lone

4053. Reg wpe Reg pocket.
100 smooth paper 75 at Coming
Mix No — Recovered 30 hours
in 33% at 160 / Jacks
assembled with Reg 2 frame
put in 21% change 15 hours
to discharge 100,
Average cal. day 88 - Edge 94 - 101

347
367

4054 Same as 4053

344 1st
345 2nd

4055 Same as 4053

446 1st 555
476 3rd "

Dmc

4056 Same as 4053

313 to V 1st
325 " 3rd

4057 Same as 4053

330 to V 1st
346 " 3rd

4058 Same as 4053

333 to V 1st
352 " 3

~~4054 Same as 4046~~

@ 500

	1	2	3	4	5	6	
4060 F	517	535	529	358	375	522	50 runs on Endurance
E	523	535	525	412	383	S.C. 521	
D	521	518	530	358	333	527	
4060 C	539	534	543	458	367	532	
B	533	528	536	450	383	522	
A	522	515	532	367	375	508	

					113	114
4060 F	538	508	483	50 runs on Endurance	500	478
E	543	510	483		525	492
D	572	508	492		508	461
4060 C	592	543	507		543	522
B	542	522	483		512	488
A	547	508	467		508	467

Doug 11/11/04

#4060 (a)

Reg pockets made 3.2 gm. of 385 [illegible]
Put in reg plated cup (strip) with
the cups formed so that the
perforation burrs are outside
Both inside & outside cup were
reverse perforation.
Pressed at 100 [illegible] smooth [illegible] at going
Charge reverse in 33% KOH
for 15 hrs at 100 amp per pocket
assemble with charged Fe's
& charge 15 hrs at 200 & run 100
cut 89 - Edge 100-102

(539 to V 1st run, 543 3rd; 533 to V, 536; 522, 532 to V 1st, 3rd; 517 1st, 529 2nd)

40.60 (b) cut 88 - Edge 99-101
same as 4060 (a)

(523 1st, 525 2nd)

4060 (c) cut 88 - Edge 100-101
same as 4060 (a)

(521 1st, 530 2nd)

4060 (d) cut ~~92~~ 92 - Edge 100-104
Same as 4060(a) except not
reversed but run reg.

4060 e cut 94 edge 102-102
Same as 4060 (d)

4060 f cut 87 Edge 100-99
Same as 4060 (d)

@ 500

		1	2	3	4	5	6	
4061	C	518	533	529	479	491	527	52 runs on end.
	B	540	545	541	496	508	533	
	A	535	543	533	471	483	524	

		58	60	61		113	114
4061	C	585	547	537	53 runs on Sandwiches	544	515
	B	583	552	550		555	528
	A	573	547	533		533	523

Done

#4061 (a) Done

Same Reg cup.. loaded with #385 Ni mix 3.2 gm.

Sprinkle some fine graphite so as to line the inside of the cup when loaded.

Run reg 4 charge & run with two 4.6 mg Fe cb 200 run 100

After 3 mins, put on small inducers

Center 86 Edge 98+102

4061 (b) Center 89 Edge 102+103

Same as 4061 (a)

4061 (c) Center 87 Edge 97+103

Same as 4061 (a)

518 1st
529 2nd

540 "
541 "

535
533

c

Cy Reviews + changed HCA –

4062C	386	312	300	277	145	158	
4062B	408	333	323	303			
4062A	236	173	153	138			
~~4062C~~	~~548~~	~~522~~	~~[illegible]~~	~~[illegible]~~	491		
	343	274	250	239			

145 to V was run after a Review + recharge showing response made it worse.

4062B –	157	160
" a	88	75
c	141	

Cenlin 83 Solon 93 + 95

4062 (a) 11/11/09

Some new cups are loaded so as to have a coating of HgO on inside of each cup.

Hanson will furnish some HgO paste which can be painted on with a brush + dried.

The cups are loaded with 3.2 gm #385 Chi. O. Range 200 mm 100

against 1 – 415 gm Fe.s.

Show more reg than 2 of Strontia + Iron enhancement

4062 (b) Cenlin 86 Solon 98 + 102

Same as 4062 (a)

4062 (c) Cenlin 86 Solon 97 + 101

Same as 4062 (a)

Done

* The cups reversed on rods in large jar (Reg) with rod + washers immersed went bad — Three done separately in small glass jars — its either something coming out of excess of KOH, or glass surface, the strip, or the rod + washers that must have made the Regs go bad, the goodones — had CP nickel whereas the Reg bad ones had glazed strip.

Not cutout
never put in spt
waiting

Done *
4064 }
4065 }

Note
Use smallest glass that will hold them to get smallest amount KOH — Use pure Ni strip + dont immerse upper end of washers —
Reversed perforations cups

8 grms Ni Thro 30 mesh, 2 grms fine graphite, 3 grms ~~sugar~~ molasses
50 atmos 1st press soak 48 hours in water, warm on steam plate water made alkaline by KOH. Then dry and press 100 atmos 1st press corrugate 75. Reverse in 33% KOH. 15 hours 100 atmos then soak 6 hours in water. Then assemble with 2 grms charge 15 hours at 200 + discharge at 100,

3.9 Cake } Act. 106 Sig. 122 + 124
4.1 " Shaft charge " 10" " 121/124
Before soaking Center 104 Sig. 123 + 125
4065 " 105 " 122 + 125
4064 " 95 " 123 + 126
4065 " 93 " 125 + 126

Made above + large number when wrong image mix, mixed it very thoroughly so could scarcely see a green particle the graphite of Coarse broke up + it was equivalent to using Recrystallized graphite + flake but not so good in impregnation as first working 1/2 Recrystallized then when fully covered all the fine flake + work it well but not so quick as to break it up much

Done

4066 } Same as 4064 - Except
4067 } Regular cups not reversed
3.9 Cake

Before cooking 4066 Centre 101 Edge 122+123
" " 4067 " 100 " 122+123

After drying 4066 105 [illegible]+122
4067 102 121 + 122
" Corrugated 4066 95 105 + 107
4067 93 105 + 107

4068 } Same as 4064. Except.
4069 } 1 gram precovered grafite or 1 gram fine grafite. Recovered grafite put on Ni first.

Before soaking Caliper Center Edge

3.9 coke

After drying 4068 } 107 125/126
4069 } 107 124/125

After final Cementing 4068 } 97 108/109
4069 } 95 108/108

Before soaking 4068 Centre 106 Edge 126/126
" " 4069 " 104 " 124/125

Dec E

4070 } Same as 4064
4071 } Except 1 gram uncovered graphite 1 gram fine graphite
fine graphite put on first uncovered graphite afterwards.
3.9 Cable

Before cooking	4070	Center	106	Edge 124+125
" "	4071	"	103	" 122+124
After Drying	4070	103		125+125
" "	4071	107		121+122
After Compacting	4070	94		107+108
	4071	93		107+107

Done

4072 } Same as 4064
4073 } But pressed 100 1st press —
75 at Corrugated before soaking —
3.9 Cals

~~Before soaking 4072 Centre 104 Edge 116 119~~
~~" " 4073 " 100 91 114 115~~

After drying 4072 104 116 117
4073 101 113 114

After Corrugt 4072 105 108
4073 92 103 107

Done

4074 } Same as 4064. but with
4075 } recovered graphite dusted on inside of cups which are to be very slightly moist with molasses, cups dried before filling –

319 Coke

Before roasting 4074 Centre 108 Edge 130+127
" " 4075 " 107 " 129+126

After drying 4074 112 126+130
4075 109 128+129

After Compacting 4074 98 109+112
4075 96 109+112

Done

4076 } same as 4064. Except the
4077 } molasses which is diluted with water 1/2 + 1/2 by weight using the 3 grams of diluted molasses instead of 3 grams on strong molasses, molasses put on Nicked first

3.5 cake

Too dry dont cover good
So dry graft the breaks up fine + then dont cover Even
tion about 60% covered -

Before soaking	4076	Center 99	Edge	117+117
" "	4077	" 99	"	116+121
After drying	4076	101		117+117
	4077	102		120+119
After Coming	4076	92		104+106
	4077	93		104+106

Done

4078 } Same as 4064, but 2 Record Jars
4079 } but with diluted molasses

1/2 4 oz — 3 grams. The molasses put on the ~~[illegible]~~ nickel first.

3.5 Cake

Before cooking	4078	Center 95	Edge 115+117
" "	4079	" 100	" 119+118
After drying	4078	99	115+117
	4079	104	116+119
After Cooling	4078	93	106+106
	4079	94	106+108

Done

4080 } Same as 4064, except
4081 } " with 3 grms diluted malinaer, and one gram recovered graphite & one gram fine graphite, Recovered graphite put on first,

3.5 Cubs

Before stroking 4080 Centre 98 Edge 119 + 118
" " 4081 " 98 " 116 + 120

After Drying

4080	103	119 + 120
4081	101	116 + 120

After Cooling

4080	95	108 + 108
4081	93	106 + 107

Done

4082 } Same as 4064 - Except 1½ hours Boiling
4083 } with 3 grms diluted molasses Recovered

~~and it [illegible]~~

3.5 Cake - Recovered pectin first
Recovered, put in 1st. Hi 1st wet with
Mol then recovered goes in
twist of three fine graffle not.
worked very much to prevent
breaking of Cakes -

Before soaking	4082	centre 100	Edge 120 + 119	
" "	4083	" 99	" 117 + 118	
After Drying	4082	103	120 + 121	
	4083	105	118 + 119	
After weighing	4082	96	108 + 108	
	4083	94	105 + 106	

Done

4084 } Same as 4064 but with
4085 } Nickel all passing 60 mesh screen,

3:9 Cake

Before soaking 4084 Center 106 Edge 124+127
" " 4085 " 107 " 128+123

After Drying 4084 112 [illegible] 130
4085 108 [illegible] 128

After Curing 4084 93 106+108
4085 93 106+108

Done

4086 } Same as 4064 except nickel
4087 } all passed through 60 mesh screen and one gram recovered graphite & one gram fine graphite ~~Recovered graphite~~ put on front
3.9 Cake

~~Before baking~~ 4086 ~~[illegible]~~ 106 Edge 127+124
" " 4087 " 104 " 124+125

After Drying 4086 111 125+129
4087 107 125+130

After Coming 4086 96 108+109
4087 95 107+109

Dine

4088 } Same as 4064 - Except on
4089 } first press lay as piece of
.005 Tin foil on each side of
cup on first press -

and ~~after~~ Then remove foil & soak -
after soak put foil on before 1st
press & Corrugating want to leave
Ends thicker
319 Cake

Before soaking 4088 bottom 110 Edge 121 + 128
" " 4089 " 104 " 120 + 125

After Dry	4088	117	120 + 129
	4089	115	127 + 128

foil stuck to one side 4089
After Comp'g 4088 95 103 + 109
4089 88 104 + 105

Done

4090 } same as 4064 the fine one Recently
4091 } but do not twist the mix but only smooth by finger like our Sechoin Mixer

3.9 bake

Before soaking 4090 centre 106 Edge 128 + 125
" " 4091 " 98 " 118 + 119

After Soaking

4090	114	128 + 130
4091	100	119 + 120

After Cooling

4090	97	110 + 110
4091	92	106 + 108

All from 4064 to 4093 are to be reversed in 30% H. Peroxide at 100 Nitr.

from 4064 to 4093 with with [illegible] took more time

June 2 1 fine & Recommend [illegible]

4092 } Same as 4064. Except 3 grms di Potte [illegible]
4093 } do not twist but work

Luke Edison Mixed.

3.5 Cake.

Before soaking 4092 Lacentre 99 Edge 116 + 124
" " 4093 " 100 " 121 + 118

After Dyeing 4092 105 117 + 124
4093 107 119 + 121

After Carrying 4092 94 105 + 117
4093 95 107 + 110

4094	462
4095	483
4096	448
4097	455
4098	

CO

4094 Dense

Reg mix 3:2 4 pockets evenly filled
press 100 atmos first
75 atmos corrugated

	Caliper	Center	side	side
Heat to 175° 7 hrs		92	401	404

Put the 4 pockets on rod, immerse in KOH, so rod + washers do not go into the solution, use a Chem Pure pick strip, no rubber or anything near the KOH, use 33% of the smallest glass possible so the minimum KOH is used
~~Charge~~ Reverse at 100 ma per pocket 15 hours, charge 200 rate 15 hours and discharge at 100 per pocket in seperate cells

		Center	Edge
4095	462 to V int	89	101 + 100
4096	483 to V int	94	99 + 100
4097	448 to V int	87	97 + 99
	455 to V int		

4101	494	498	X	494

CO

4098 Same

Same as 4094.
Except also a piece of can alock
Cut to same size as the CP
Nickel strip used with 4094

~~Same 87 6 1/2 x 100 + 100~~
~~503 to 1 1/2"~~

~~4099 87 " 99 + 100~~
~~503 to 1 1/2"~~

~~4100 87 " 100 + 102~~
~~503 to 1 1/2"~~

~~4101 87 " 98 + 98~~
~~494 to 1 1/2"~~

4) 2016 / 504

4102 Done

Same as 4094 –
Except was his big battery
jar with CP nickel same
size as in small cell of
4094 –

	Center		Edge
	84	498 to V 1st	100 & 104
4103	86	507 to V 1st	98 & 100
4104	87	500 to V 1st	110 & 100
4105	80	511 to V 1st	100 & 102

CO

Done

4106. Same as 4094.
Except reversed perforations
471 to V.ult

	Acept.	Edge
	87	100 & 101
4107	91	102 & 103
	420 to V.ult	
4108	70	101 & 102
	463 to V	
4109	87	98 & 99
	378 to V	

	1	2	3	4	5	6	7	8	9
4110	533	533	530	524	526	548	543	526	518
4111	530	524	525	520	517	550	530	527	523
4112	525	532	528	528	532	537	532	513	512
4113	530	50	527	523	526	546	548	525	520
	529.0		529	524.7	525.7	545	543.0	523.7	518

Evidently reversed perforations are good. They have always shown

Even runs

	11th	9				66	69	69	
4113	528	380	502						
4112	515	371	502	X	8	510	500	497	
4111	529	371	513	X	8	512	504	S.C.	
4110	525	358	500	X	6	500	493	486	50 runs on Endurance
	525.7	9							

11	120	121
4112	492	467
11	524	481
10	467	447

Done

4110 Reversed perforation

3½ Reg mix, 15 62

changed Reg 200 mm 15 hours

in 21% Dredged 100 ~~[illegible]~~

Not Reversed!!

Center 88 533 to V Edge 100 × 100

4111 85 97 ÷ 99

530 to V

4112 87 97 ÷ 102

525 to V

4113. 86 97 ÷ 98

530 to V

Done

4114 A. Oxalate all night
Cup from Gibbs Gad coll.
Charge 15 hours 200 discharge 100

Center 84 Edge 99 & 99

485

4115 A ~~B~~ ~~Potassic Citrate~~ only Dup of 4114
Charge 15 hours 200 discharge 100

Center 85 Edge 99 & 99

480 1

4116 B Potassic Citrate only all night
Cup from Gibbs Gad coll.
Chg 15 hours 200 discharge 100

462 Center 99 Edge 100 & 101

4117 B Dup of 4116

Center 84 Edge 94 & 100

393

Done

4117 C. Ammon Chloride & KOH. 1 oz alloy
Ammon Chl. cupro from Gibbs
Gad cell, chg 15 hours 200 disch 100

Centre 83 Surf. 97 + 97

470

4118 C Dup of 4117

Centre 87 Surf. 101

468

4119 D. Ammonia Chloride & ammon.
Cupro from Gibbs Gad cell amount
Chg 15 hours 200 disch 100

Centre 87 Surf. 112 102

370

4120 D Dup of 4119

Centre 88 Surf. 100

369

Done

4121 E. Ammon Chl 4 grms soaked all night sample
Cup from Clibbs bad cell.
Chg 15 hours 200 dischg 100

Capacity 89 Edge 101 - 102

373

4122 E. Dup of 4121

Capacity 87 Edge 100 + 101

388

4123 F. Ammon Chl. 2 grms soaked
all night. Cup from Clibbs bad cell.
Chg 15 hours 200 dischg 100

Capacity 83 Edge 93 + 94

340

Done

4124 F Dup of 4123

Certified 89 Edge [illegible]

428 to V

4125 H - Ammon Chl 4 oz all night soak
Cup from Gibbs 600 cath. Chg 15 hours
at 200 duchy 100

Certified 85 Edge 98 + 99

427 to V

4126 H. Dup of 4125.

Certified 89 Edge 98 + 100

344 to V

Done

4127. I Strong Sugar all night, Cup from Gibbs Gold cell, chg 15 hours 200 dischg 100

Center 91 Scale 98 + 100

397

4128 I Dup of 4127

88 Scale 98 + 101

448

4129 J. Ammon Chl very concentrated Some of Chlo grass Will Off squeezed out up 20 hours chg 15 hours 200 dischg 100 - Cup from Gibbs Gold Cell

Center 90 Scale 102 + 103

267

Jones

4130[J] Dup of 4129 -

85

253

4131 K Sugar + KOH, soaked all night
Cup from lichen bad cells. Chg 15 hours
200 charly 100.

506

4132[K] Dup of 4131

Center edge

449

Lens

4133 L KOH + Potassic Citrate, all night, 24 hrs bad cell. chg 15 hours 20 b. disch g 100 -

Center [illegible] Edge [illegible]

473

4134 L Dup of 4133.

Center. Edge [illegible]

443

4135 M. 1/2 gram KCy all night Cup from 24 hrs. bad cell. Chg 15 h. at 200 disch g 100

Center [illegible] Edge [illegible]

436

Done

4136-M Dup of 4135

Charles 89 [illegible] 100 + 101

467

4137 N. Ammonia + Ammonium Chloride,
Considerable whitish green stuff
Came out, washed a little,
Cup from Gibbs 6 oz. cold.
Chg 15 hours 200 discharg 100.

Charles [illegible] 90

447

4138 N Dup of 4137.

Charles [illegible] Edgar 96-99

470

Done

4139 = O = Ammonia only. all mylt
Cup from 9466 bad cap.
Chg 15 hours 200 deg chg 100.

Ceiling 25 Expl [illegible]

403

Auth

~~4140 = O = Dup of 4139.~~

4141	335
4142	483
4143	452
4144	505
4145	354
	425.8

5/2129
425.8

Done

4141 – Req. to be revised
15 hours in 33% against a
piece of Can ship in large jar
at 125 Fahr. 100 hrs Soak in ~~water~~
21% for 3 hours, then ~~[illegible]~~ infusion changed
Change 15 hours disdg 100

Center 84 Edge [illegible]

4142 Dup of 4141

Center 87 Edge 100+101

4143 Dup of 4141

Center 88 Edge 100+101

4144 Dup of 4141

Center 88 Edge 98+100

4146	458
4147	523
4148	468
4149	448
4150	493
	477

2nd

4150	460
4149	387
4148	412
4147	524
4146	413

Done

4145 Dup of 4141 –

Cell 89 Page 97 + 111

4146 – Req to be reversed at 100 rate in 33% at 125" Falw for 30 hours against a piece of Can strip, put in same jar if possible as 4141 – then put in Cell with 21% KOH 3 hours before charge then Chg 15 hours at 200 discharg 100

Cell 89 Page 97 + 98

4147 Dup of 4146 –

Cell 90 Page 103 + 104

Done

4148 Dup of 4146

Center 90 Page 101 + 103

4149 Dup 4146

Center 88 Page 100 + 101

4150 Dup 4146

Center 87 Page [illegible]

4151 Dup 4146

4156	470
4155	280
4154	378
4153	382
4152	413

Doses

4152 Reg to 62 reserved at 100 rate in 33% at 125° Heater for 60 hours against a piece of Can stock, & large glass jar. put them in same box of powder ~~that~~ here 4141 + 4146 groups Then put in Cell with 21% smoke 3 hours before chg + then chg 15 hours at 200 discharg 100,

Center Edge 99 + 102

4153 Dup of 4152

Center 85 Edge 97 & 99

4154 Dup of 4152

Center 88 Edge 100 + 98

	N	Orig		3rd run	
4157 -	346	93	101	101	104
4158	352	88	102	102	101
		90.5	101.5	101.5	102.5
				90.5	102.5
				-11	-1.8

~~On the south counters w/ fine material and bracing~~

Dime

4155 Dup of 4152

Center 85 Edge [illegible]

4156 Dup of 4152

Center [illegible] Edge 103 + 10[illegible]

Not cut out.

4157. Just the same as group 4152 Except Inverted underwater curing for 120 hours —

Center 93 Edge 101 + 104

~~3rd~~

4158 Dup of 4157

Center 88 Edge 102 + 101 —

~~3rd~~

Done

4159 Dup of 4157

Centre 87 Edge 99 + [illegible]

4160 Dup of 4157

Centre 8[illegible] Edge 9[illegible] + 101

4161 Dup of 4157.

Centre 86 Edge 96 + 101

	t V	orig cap	Cal after run		Def.
4162	370	90	101	98 103	8
4163	405	85	102	93 101	5
4164	132	87	97	93 100	6
4165	128	86	97	90 99	4
4166	130	88	99	93 100	5
					56

If it were not for 4163 would say it was dehydration. It may be chemical combn of impurities in KOH, at the surface of the KOH where it makes contact with graphite, or the surface of cup in zellin deliquated where there is but little graphite contact, or some chem combn.

	1	2	3
4166	153		127
4165	160		132
4164	159		140
4163	444		975
4162	410	453	433

Done

4162 Group of 5 Regulars put together & soaked in 40% KOH 175 Fahr for 40 hours then taken out & put in 21% percent direct so as to keep as much 40% inside ~~pocket~~ as possible then charge 15 hours 200 discharg 100

90 101 & 102

4163 Dup of 4162
Cap 88 Cal 101 & 102

4164 Dup of 4162
Cap 95 Cal 99

4165 Dup of 4162
Cap 86 Cal 96 & 99

4166 Dup of 4162
Cap 88 Cal 99 & 100

4167 Group of 5 nickels reg to be reversed 100 rate at 175 Take in 40% KOH in Tumblers for 15 hours put in ~~dilute~~ 12½% ~~KOH~~ immediately put in 21% then change 15 hours 200 rate & discharge 100 –

		Orig Cal	Cal after run		
4167	250	86	102	88	100
4168	243	89	102	90	102
4169	226	87	100	86	98
4170	100	89	101	92	102
4171	250	85	98	85	97

Zone Temp 175

4167 – Group of 5 nickels Regular Put in 40% KOH Reversed 15 hours at 175 ~~& put in 21% 15 hours~~ 200 discharge in 21% after Cups have soaked 16 hours in the 21% to Even up the strength ~~of the solution, the cup~~ ~~should be~~ –

Charge 86 Cal 102 100 + 102

4168 Dup of 4167

Charge 89 Cal 102 100 + 102

4169 Dup of 4167

Charge 87 Cal 98 + 100

4170 Dup of 4167

Charge 89 Cal 101 100 + 101

4171 Dup of 4167

Charge 85 Cal 98 + 98

Not reversed

4172 Group of 5 Regs.
Jo. Gz changed in 33% 15 hours
C P Nickel strip at 100, then
taken out & baked 14 hours
in 21% & then recharged 15 hours
200 rate & charged 100 — ~~[illegible]~~

1st Run

	to V	orig cal	Cal from	
4172	631	89	100	97 101
4173	688	87	98	97 103
4174	758	87	101	97 100
4175	700	88	102	97 101
4176	460	89	100	98 104

2nd Run

		hours
4172	502	20.3
4173	570	17.2
4174	632	16.7
4175	558	20.3
4176	339	26.3

3rd

4176	320
4175	530
4173	549
4172	472

Done

4172 Group 5 Regular Nickels
in 33% kept 15 hours at 175 rate
~~& charged~~ at 200, then taken
out and put in 21% ~~[illegible]~~
~~charged 15 hours [illegible]~~
and then discharged at 100,
C P Nickel strip. center 89 edge [illegible] 100

4173 Dup of 4172
center 87 edge [illegible] 98

4174 Dup of 4172
center 87 edge 97 101

4175 Dup of 4172
center 88 edge 100-102

4176 Drop 4172
Center [illegible] edge [illegible] 100

4177 Group 5 Nickel's Reg –
Jo. 62 CHARGED 15 hours 175 Fah
in 33% KOH, 200 rate in Nickel
Beaker Then put in 21% + assemble
& put in Cells 21% Dont put in
Water, – Charge 200 rate 15 hours
discharge 100 –

		Orig	Cal
4177	303	89	102
4178	674	89	103
4179	236	87	100
4180	640	88	101
4181	540	86	100
	200		
4181	460		
4180	559		
4179	200		
4178	548		
4177	237		

Done Temp 175

4177 – Group of 5 Regulars
Charged 15 hours in 33% in a
Nickel Beaker & Nickel clip
~~then put in 21% 6 hours~~ put in 21% 16 hours
~~& charge 15 hours at 200 +~~
~~Then discharge at 100 in 21% KOH~~
Center 84 Edge

4178 Dup of 4177
Center

4179 Dup of 4177
Center 88 edge

4180 Dup of 4187
Center 88 edge 99 + 11

4181 Dup of 4187
Center 86 edge 97 + 200

1st

		Orig	Cal
4182	626	90	102
4183	391	86	99
4184	285	91	101
4185	440	90	103
4186	608	87	101

2nd

4186	60
4185	340
4184	208
4183	303
4182	517

Dens Temp 175

4182 Same as 4177 Except
~~Cen F. Cent [illegible]~~
Use 40% — 175 Fahr. 175°
Change 15 hours at 200,
~~[illegible]~~
put — 21% Kott [illegible]
Recharge 15 hours 200 At [illegible]
at 100 in 21% Kott—
Center 90 Edge 101 + 102

4183 Dup of 4182
Center 86 Edge 0 + 99

4184 Dup of 4182
Center 91 Edge 100 + 101

4185 Dup of 4182
Center 90 Edge 101 + 103

4186 Dup of 4182
Center 87 Edge 97 + 101

		Orig Cal		Cal after run	
4187	417	86	101	90	102
4188	333	89	100	95	102
4189	311	86	99	87	98
4190	384	87	100	92	99
4191	258	96	102	91	100

Dime

4187 Group of 5 nickels

Reversed in since ~~[illegible]~~ Jumbles
Reversed 15 hours, 100 rate, at 33⅓ against
CP Nickel Cotrip. This was a
duplication of groups 4094 to
4097 — to a section of it to ob. be
low to vault — Temp 175 later
~~Charge~~ put 21 ohm KOK 21%
~~[illegible]~~
then putting 21% of 15 hours
at 200, 2 [illegible] 100
Temp 86 edge 100 + 101

4188 Group of 4187
Center 89 edge 99 + 100

4189 Dup of 4187
Center 86 Edge [illegible] + 99

4190 Dup of 4187
Center 87 Edge 99 + 100

4191 Dup of 4187
Center 96 Edge 100 + 100

		orig cal		Cal after run	
4192	152	85	97	90	99
4193	353	88	101	94	104
4194	437	91	103	95	102
4195	419	86	99	91	101
4196	X				

Done

4192 = Group of Muskals.
Reversed 33% 175 Jabs in Source Cell — 100 Rate 15th Ultra Can strip, 1 Can put in Sep glass each cup in ~~[illegible]~~ Rot 21% put in Cell & strip 15th hour 200 density 140 in 21% Rot glass in to duplicate results obtained from 4098 to 4101.
Center 85 Edge 95 & 97

4193 Dup of 4192
Center 88 Edge 98 & 101

4194 Dup of 4192
Center 91 Edge 102 & 103

4195 Dup of 4192
Center 86 Edge 96 & 99

Soaked 18 hrs. in the 33 1/3 before [illegible] —

4199	476	457	469	509	511	496	522	
98	478	462	492	509	512	482	520	
97	482	466	467	514	517	490	527	
96	448	420	454	467	486	487	487	
	474	451	[illegible]	[illegible]	534			

			14th			68	70	71	
4199	498	507	506	503	x	567	533	524	
98	498	503	516	500	x	570	523	532	
97	500	508	516	515	x	567	533	533	
96	443	505	463	467					

Sy numbers Rod.

		123	124
4199	Sy numbers Rod.	532	500
98		538	511
97		557	529

Dip — Temp 175

4196 — group 4 makes
put in 33 1/3 KOH made from stick
Potash — use CP moked strip
Reversed 100 rate 15 hours — 150 falls
then Put pockets ~~[illegible]~~ in 21% KOH
assemble in acc chg 200 rate
15 hours dooking 100 — in 21% KOH
~~16~~ Center 90 Edge 102 + 102

4197 Dup of 4196
Center 90 Edge 103 + 103

4198 Dup of 4196
Center 94 Edge 101 × 101

4199 Dup of 4196
Center 87 Edge 100 + 101

Done

4200. Group of 4 nickels -
- Shuttler Reversed against
a pocket containing Nickels
Reduced by Hydrochloric mixed
84.2 graphite. Use Rate 33% KOH,
100 rate 15 hours. 175 [illegible]
~~[illegible]~~ [illegible]
assemble in Celloy 9 chg 200
rate 15 hours discharg 100 rate,
in 21% KOH Centre 89 Edge 99+102

4201 Dup of 4200
Center 88 Edge 100+102

4202 Dup of 4200
Center 84 edge 95+99

4203 Dup of 4200
Center 84 Edge 100+102

4206 Group 4 microf.
Reversed in 33% 15 [illegible]
~~1245 Jackson~~ Containing 6

	15"
4204	396
4205	462
4206	431
4207	396
4208	425

5 } 214 / 428.4

Lens Temp 175

4204 Group 5 nickels
Reversed 15 hours 100 rate in
our Regular tumbler, in 33%
Containing 4 grammes of
Water glass (1:2) silicate of Soda
~~Temp~~ Temp ~~125~~ 7 hr - put in KOH 21%
Hrs assembled from mfg. Cell Co +
chg 200 15 hours rate clean. g 100 in 21%
in 21% KOH
Center 89 Edge 102 & 103

4205 Dup of 4205
Center 90 edge 103 & 104

4206 Dup of 4205
Center 87 Edge 99 & 100

4207 Dup of 4205
Center 90 edge 99 & 101

4208 - Dup of 4205,
Center 89 edge 101 & 103

	1st	2nd						
4213	638	56		503	505	475	×	
4212	622	617	537	525	59	55		
4210	548	487	408	390	380	443		
4211	607	552	482	460	453	415	×	
4209	703	733.	404	658	642	597	×	

	61	63	64		116	117
4213	490	505	523		527	510
11	433	447	455		460	447
09	531	528	537		526	512

Done Temp 75°

4209 group 5 nickels
Changed in Tumbler Containing
33% of having 4 grammes — Temp 75°
Silicate of Soda change 200 rate
15 hours Refill KOH 21%
recharge 200 rate 15 hours + discharge
100 rate in 21% KOH
Center 89 Edge 99 + 101

4210 Dup of 4210
Center 85 Edge 96 + 99

4211 Dup of 4210
Center 88 Edge 98 + 102

4212 Dup of 4210
Center 86 Edge 100 + 101

4213 Dup of 4210
Center 88 Edge 100 + 101

4218	492	450	465
" 17	513	505	502
" 16	493	463	465
" 15	522	503	503
" 14	456	430	417

Done

4214 Group of 5 nickels
Reversed in 33% 150 Temp
CP nickel strip 15 hours
100. use a tumbler
In the KOH, put 6 grams
of Bismuth Hydroxide,
Edwin will prepare it.
Afterwards change in 21% 15 hours
at 200 check 100.
Center 89 Edge 100 + 102

4215 Dup of 4215
Center 87 edge 100 + 102

4216 Dup of 4215
Center 91 edge 101 + 102

4217 Dup of 4215
Center 87 edge 98 & 99

4218 Dup of 4215
Center 88 Edge 100 + 102

	1st run	2nd	3rd
4223	502	484	
4222	507	494	
4222 3rd	516		
4221	515		508
4220	516		
4219	513		497

Done

4219 — Group of 5 nickels Reg Mix which has been worked with a magnet to get most out. Charge 15 hours 200 rate discharge 100 — 21% KOH.

Center 90 Edge 99+104

4220 Dup of 4219
Center 90 Edge 101+103

4221 Dup of 4219
Center 88 Edge 98+100

4222 Dup of 4219
Center 86 Edge 98+99

4223 Dup of 4219
Center 90 Edge 101+102

1948

4224	638	
4225	433	
4226	417	
4227	304	
4228	590	28

21

4228	512	28
4227	217	
4226	50	
4225	333	

Done

4224 Group of 5 Rejected
reversed in 33% at 175 rate in
thimbles for 15 hours 100 rate,
Koff poured out a fresh 33% put in.
+ Charged 15 hours 200 rate.
then put 21% Koff + assembled
in cells with 21% chg 15
hours 200 rate charged 100
in 21%

Center 88 Edge 98 + 101

4225 Dup of 4224
Center 90 Edge 100 + 101

4226 Dup of 4224
Center 90 Edge 103 + 103

4227 Dup of 4224
Center 86 Edge 98 + 99

4228 Dup of 4224
Center 87 Edge 99 + 102

4229	183	157	150	183
30	218	183	173	
31	482	427	425	432
32	587	507	520	462
33	583	527	517	516

Lots

4229 – Group of 5 Regular Nickels, heated on hot plate to 212 about and quickly transferred to hot 33% KOH in tumbler, then put in Batt and tumbler kept at 150 for 15 hours. Reversed against a Nickel strip CP – at 100 rate, then ~~Reverse~~ ~~Convert~~ ~~to Plant~~ Change KOH for fresh lot of 33 & Reverse the Current to changing at 200 rate for 15 hours, then Take out & put in 21% & accumulate in Cells with 21% Change 15 hours at 200 & charge 100 rate (Cap'd 20 Lines by mistake) (Sample 6 hours then)

Center 87 Edge 96 + 98

4230 Dep of 4229
Center 85 Edge 97 – 100

4231 Dep of 4229
Center 90 Edge 102 + 105

4232 Dep of 4229
Center 87 Edge 100 + 103

4233 Dep of 4229
Center 88 Edge 100 + 101

Zone

4234 — group 5 nickels — got up to 212 on half plate and plunged into RQH, allowed to work 24 hours in the 5% + then put in 21% in cells + quickly ~~[illegible]~~ put on charge 15 hours 200 bate charge 100 rate

Center 88 Edge 100 + 104

4235 Dup of 4234

Center 89 Edge 99 + 101

4236 Dup of 4234

Center 88 Edge 100 + 102

4237 Dup of 4234

Center 87 Edge 100 + 101

4238 Dup of 4234 —

Center 87 Edge 97 + 99

Done

4239 Group of 5 nickels heated to 212 on hot plate & plunged quickly into 5% KOH, allowed to soak 24 hours in the 5% & then put in cells with 21% & quickly thereafter put on charge at 200 rate for 1½ hours, 400 disch rate

Center 89 Edge 97 + 100

4240 Dup of 4239
Center 90 Edge 101 + 102

4241 Dup of 4239
Center 88 Edge 100 + 102

4242 Dup of 4239
Center 88 Edge 99 + 102

4243 Dup of 4239
Center 89 Edge 101 + 103

Done

4244 Same as 9 rdup
4239 Except 30%
Center Edge 100 + 101

4245 Dup of 4244
Center 90 Edge 102 + 103

4246 Dup of 4244.
Center Edge 101 + 103

4247 Dup of 4244
Center 86 Edge 99 - 99

4248 Dup of 4244 -
Center 86 Edge 98 + 100

4253	487	497
4252	473	507
4251	485	507
4250	475	503
4249	497	513
	480.3	502.8

Average temp of bottle in which they are soaked is 144° Fahr —

Time between taking out and putting in change - $1\frac{1}{3}$ hrs.

Not Cured

Orn & Mix Dried before pulling in pockets, 2 hours at 220 or three hours at quickly heated —

4249 Group of 5 Reg 424 n. mix

To be soaked in ~~[illegible]~~ 33% for 24 hours in closed big bottle on hot plate. The 5 nickels before immersion in the 33% are to be heated 4 hours at 220 Fahr & then plunged quickly in the 33, at end of 24 hours they are to be taken out of bottle & put in 21% ~~[illegible]~~ assembled in cells ~~[illegible]~~ note the time between taking out of big bottle & the time they go on charge - use irons that have been rich before, don't use new irons — Charge at 200 rate 15 hours doubling 100 rate

Center 16 Edge 97-104

4250 Dup of 4249

Center 88 Edge 101-101

4251 " 4249

Center 91 Edge 103-102

4252 " 4249

Center 90 Edge 103-103

4253 " 4249

Center 92 Edge 105-102

4254	478	50			492	470
4255	460	50		463	495	470
4256	452	487	488	497	503	470
4257	456	505	506	507	511	478
4258	462	500	506	510	525	489
av	459	497.3	500	497.7	508.5	

Time between taking out of bottle and putting on clay - 14 ½ hrs.

3 | 2295 | 3 | 1492
459 | 497.3

1.00

✓ Done

4254. Same as 4249 for soaked 48 hours in big Gallite with 33%

Center 93 Edge 104-108

4255 Dup of 4254
Center 93 Edge 103-104

4256 " 4254
Center 86 Edge 97-100

4257 " 4254
Center 92 Edge 104-105

4258 4254
Center 89 Edge 103-102

4263	420	442	442	500	465	506
" 62	445	479	491	512	477	503
" 61	458	483	498	511	476	500
" 60	442	473	492	501	467	
" 59	440	478	492	507	473	
	443.2	471	490	506.2		

Same solution coloring off of bottle and putting on charge - 14 ½ hrs.

5 | 2216
443.2

5 | 2451
490

5 | 2355
471

✓ Done

4259 Same as 4249 Except soaked 72 hours in big bottle with 33%

Center 92 Edge 105-101

4260 Dup of 4259
Center 91 Edge 104-102

4261 " 4259
Center 93 Edge 106-103

4262 " 4259
Center 92 Edge 104-104

4263 " 4259
Center 90 edge 103-102

Time between taking out of bottle and pressing on charge - 38 hrs.

4264	382	460	[illegible]	485	446	472	490
65	412	488	487	508	464	511	515
66	365	442	473	492	447	483	487
67	402	142	480	498	458	505	510
68	319	113	462	487	446	494	498
	380	463	475	494		493	500

	2nd run		4th run	
4264	97-100		89	102
65	100-104		91	104
66	98-102		88	103
67	97-104		89	104
68	95-103		87	99

		62	64	65		117	118
4266	Standard Expansion	547	546	542	Standard Expansion	532	505
65		590	562	548		583	517
64		547	530	523		530	505

Dens

4264 Same as 4249 Except soaked in big bottle 96 hours in 33%

Center 89 Edge 102-97

4265 Dup of 4265

Center 91 Edge 104-104

4266 " 4265

Center 88 Edge 103-101

4267 " 4265

Center 89 Edge 104-102

4268 " 4265

Center 87 Edge 99-99

Time [illegible] taking out of bottle and putting in new change — 33 hrs.

4269	55	458	489	506	487	504
4270	57	463	492	505		504
71	62	450	492	500	495	502
72	57	450	489	499	477	499
73	66	463	485	499	475	471
	5944					

Cells used by Warren for special experiments — about 12 mins. Then run regular again as follows, —

After Warren got through put them in test

4273	500	492
72	512	500
71	514	500
70	492	486
69	516	511

Done

4269 Same as 4249 except soaked in big bottle 120 hours in 33%

Center 94 Edge 102 - 104

4270 Dup of 4270

Center 92 Edge 104 101

4271 " 4270

Center 91 Edge 103 - 102

4272 " 4270

Center 95 Edge [illegible] - 104

4273 " 4270

Center 91 Edge 104 - 102

4278		216
4277	144	245
4276	175	253
4275	136	210
4274	153	263
	152 av.	91

average small 2nd run 11.2 Center 3.8 Edge

60.
72.
90.
108.
120.

Time between taking out of bottle and putting on charge - 5 hrs.

~~4275 Group of 5 nickels mixed dried 2 hours at 200 or [illegible] that & quickly~~

Omit

4274 Group 5 nickels made with Green nickel no graphite, crushed 16 gauge 30 mesh + dried at about 220 Fahr 2 hours Then quickly made into pockets, and pockets heated 4 hours at about 220 Fahr + quickly plunged into a 16 bottle containing 33% KOH, and put on hot plate They are to Remain in bottle 24 hours, + removed & put on cells with old flow with 21% + Charged 15 hours 200 rate + discharg. 100 rate.

Center 98 Edge 112 + 113

4275 Group of 4275
Center 97 Edge 109 + 110
4276 " "
Center 100 Edge 112 + 113
4277 " "
Center 100 Edge 111 + 115
4278 " "
Center 97 Edge 110 + 113

4279	111	248	297	298		290	291
4280	137	245	323	310		295	295
4281	135	283	313	298	92		320
4282	108	245	265	288		257	298
4283	50	50	135	233		257	253
	1304	253	304.5	265		275	297

Same but more - taking pick of bottle more
[illegible] - 18 days.

113.8 / 257 / 304.5 } 141 / 99

4 | 121.8 / 304.5

4 | 102.1 / 255

304.5 / 255.0 / 49

255.8 / 113.8 / 141

111.17

4 | 142.7 / 285

4 | 109.9 / 285

Done

4279 Same as 4275 except soaked 48 hours in big bottle, in 33%

Center 99 Edge 110 + 114

4280 Dup of 4280
Center 100 Edge 112 + 112

4281 " 4280
Center 98 Edge [illegible] 114

4282 " 4280
Center 98 Edge 110 + 112

4283 " 4280
Center 103 Edge 115 + 116

Put in [illegible] [illegible]

4284	91	197	203	234	234
4285	121	248	260	266	266
4286	130	240	243	257	257
4287	144	256	283	280	298
4288	127	259	283	280	300
	122.6	260			271

Time between taking out of bottle and putting on charge - 18 hrs.

5 | 1.1.3 = 1.26

5 | 1200 / 200

26.5 | 1.26.6 = 1.3.7

5 | 1325 / 265

✓ Done

4284 Same as 4275 except.
Soaked for 72 hours in bag
Gottle with 33%
Center 100 Edge 112 & 115

4285 Dup of 4285
Center 100 Edge 113 - 112

4286 " "
Center 95 Edge 107 - 110

4287 " "
Center 101 Edge 110 - 114

4288 " "
Center 99 Edge 114 - 110

Time between taking off of bottle and putting on clay — 42 hrs.

4289	38	2nd	220	272	255	by
90	31		244	238	215	
91	45	Methods	191	248	253	
92	43		196	247	237	
93	47		196	250	50	
					254	

4 | 936
234

✓ Dunc

4289 Same as 4275 except soaked 96 hours in big on 100c with 33%
Center 97 Edge 114-113

4290 Dup of 4290
Center 102 Edge 116-115

4291 " "
Center 101 Edge 115-115

4292 " "
Center 101 Edge 111-115

4293 " "
Center 102 Edge 15-116

Same between taking out of bottle and putting on charge - 42 hrs.

~~4294~~
~~95~~
~~96~~
~~97~~
~~98~~

~~with grooves~~

4294
~~4293~~

4294 | Did not metallize
95 | dropped immediately
96
97
98

4297	96	201	248	258	262
96	88	232	260	270	267
95	116	203	234	242	242
94	136	232	247	257	257
"	~~96~~ ~~140~~	220	247	~~258~~	253
					256

6

5/12/61
256

Dens

4294 Same as 4275 Except soaked in bag 6 days 120 hours
Center 102 | Edge 117 - 115

4295 Dup of 4295
Center 103 Edge 115 - 116

4296 " "
Center 104 Edge 115 - 117

4297 " "
Center 102 Edge 114 - 116

4298 " "
Center 103 Edge 116 - 115

4299	103	1st Run
4300	147	
4301	163	
4302	87	
4303	67	
	113.4	

2

4303	503	
4302	587	
4301	495	2nd Run
4300	505	
4299	512	
	504.4	

3

4299	519	
4300	515	3rd
4301	495	
4302	520	
4303	510	
	512.4	

Done

4299 Group of 5 nickels
The nickel mix being packed to inconel
225 Fahr before use in pockets
~~[illegible]~~ for 2 hours,
Then pockets heated 4 hours at 225
~~and put in One percent Potash~~
~~[illegible]~~ Each pocket put in little
Cell containing One percent potash
and charged 15 hours 200 rate
discharge 100 rate, ~~[illegible]~~ The Second
Run up to 6½ in 21% KOH.
Chg 15 hours 200 rate discharge 100
rate, Before running in 21% let them Soak 2 hours
Center 91 Edge 105-104

4300 Duplicate of 4299
Center 91 Edge 103-102

4301 " "
Center 88 Edge 100-101

4302 " "
Center 93 Edge 104-104

4303 " "
Center 95 Edge 102-103

~~4304~~	~~277~~
4305	279
4306	275
4307	270
4308	275
	2742

4308	505
4307	482
4306	497
4305	503
	4967

4304	507
4305	518
4306	513
4307	518
4308	524
	5168

Done

4304 Same as 4299 Except first run in Two per cent KOH + 2nd run in 21% —

Center 93 Edge 105-103

4305 Dup of 4304

Center 91 Edge 105-102

4306 " "

Center 90 Edge 96-104

4307 " "

Center 87 Edge 98-100

4308 " "

Center 89 Edge 101-103

	to V
4309	383
4310	389
4311	350
4312	387
4313	388
	379.4

4313	505
4312	507
4311	510
4310	497
4309	502
	504.2

4309	520
4310	527
4311	500
4312	519
4313	527
	520

Done

4309 Same as 4299 - Except first run in Four per cent KOH. 2nd run in 21%

Center 94 Edge 101-104

4310 Dup of 4309

Center 95 Edge 105-103

4311 " "

Center 93 Edge 101-106

4312 " "

Center 93 Edge 103-106

4313 " "

Center 92 Edge 105-101

	to V
4314	467
4315	457
4316	487
4317	443
4318	459
	448.6

4318	507
4317	500
4316	497
4315	492
4314	512
	501.6

4314	520
4315	527
4316	513
4317	527
4318	525
	521.6

Done

4314 Same as 4299
Except 1st run in EIGHT
per cent KOH, 2nd run in 21%
Center 90 Edge 102-102

4315 Dup of 4314
Center 99 Edge 103-100

4316 " "
Center 92 Edge 100-100

4317 " "
Center 90 Edge 105-102

4318 " "
Center 100 Edge 104-104

	to V
4319	498
4320	497
4321	492
4322	483
4323	482
	490

4323	507
4322	504
4321	507
4320	523
4319	525
	513.0

4319	525
4320	523
4321	517
4322	516
4323	425
	501

Dens

4319 Same as 4299 Except 1st run in SIXTEEN per cent ROH, 2nd run 21%
Center 93 Edge 105-104

4320 Dup of 4319
Center 91 Edge 104-104

4321 " "
Center 90 Edge 103-103

4322 " "
Center 93 Edge 108-102

4323 " "
Center 90 Edge 104-102

	to V
4324	437
4325	467
4326	451
4327	480
4328	480
	463

2nd

4328	515
4327	507
4326	472
4325	502
4324	467
	49216

4324	465
4325	469
4326	477
4327	510
4328	513
	490

Dnc

4329 – Group 5 nickels. ~~the~~ Heated on hot plate one hour ~~&~~ then immersed quickly in 33% and Charged ~~&~~ 15 hours 150 after in tumbler 100 rate. CP middling. Then put in cells with 21% allowed to soak 6 hours & then charged 15 hours 200 rate discharg 100

Center 98

4330 Dup of 4329

91

4331 " 4329

91

4332 " 4329

Center 91

4333 " 4329

Center 87 97 ± 98

4338	693	560	5
37	697	578	562
36	696	592	572
35	680	583	566
34	690	590	563

Dens

4334 Same as 4329 Except The nickels are immersed in the 33% very slowly Take about one minute to place them down into liquid so air can get out, ~~[illegible]~~

Cond [illegible] 100

4335 Dup of 4334

Cond [illegible] 101 & 102

4336 " "

Cond 90 [illegible] 101 & 104

4337 " "

Cond 88 [illegible] 100 & 102

4338 " "

Cond 90 [illegible] 99 & 102

4343	677	572	562	553
42	665	563		577
41	667	562		2nd
40	673	558	565	550
39	667	562	565	548

CO

Dr.

4339 – Group 5 nickels, only give the pockets 50 atmos pressure with smooth die – then heat on hot plate one hours & very slowly lower them into water – let them stay in water 3 hours then dry for one hour on hot plate then pressure of 100 tons for 30 minutes – then heat slowly in 33% – Run Charge in formator equipment. CP Nickel strip 15 hours 100 rate. 150° dry – then put in 21% for 6 hours – Charge 15 hours 200 rate discharge 100 rate

Cells 88 Edge 110 + 111
95 104 + 105

4340 Dup of 4339
Center 96 Edge 110 + 110
94 103 + 104

4341 " "
Center 87 Edge 108 + 108
94 105 + 107

4342 " "
Center 89 Edge 109 + 110
100 102 + 107

4343 " "
Center 92 Edge 112 + 113
93 103 + 104

4348	669	565	538
47	667	565	555
46	673	575	558
45	677	575	550
44	667	567	555

Dme.

4344 - 5 nickels made from mix which has been put in an Evaporating dish and packed down or just enough water put on to wet it but not to float it, or show any water on Top then dry the mix Thoroughly & made into packets regular Judy, heat on hot plate & slowly increase in 33% ~~Changing~~ in Jumbker 1500 for 15 hours against C.P Nickel strip 100 rate, then put in 21% soak 6 hours & chg 200 rate also chg 100 rate

Cinder [illegible] Eagle [illegible] $100

4345 Dup of 4344

Cinder [illegible] Eagle [illegible]

4346 " "

Cinder 95 Eagle [illegible] 105

4347 " "

Cinder 87 Eagle [illegible] $99

4348 " "

Cinder 91 Eagle 102 $104

4353	643	547	547	542
4352	633	557	553	550
4351	640	557	550	542
4350	633	548	553	546
4349	633	562	543	540

CO

4349

4348 - Group of 5 nickels put in 33% Regular wax-use Tumbler, ~~Rechange~~ Change against a platinum wire or Chp 15 hours at 100 - 150 Fahr, then Soak 6 hours 21% ~~Fahr~~ Chg 15 hours 200 dischg 100 -

93 103 + 106

4350 Dup of 4349

93 103 + 106

4351 " "

93 103 + 106

4352 " "

88 103 + 106

4353 "

89 99 + 108

4358	643	560	545	549	542					479
4357	643	562	553	547	545	523	532	525		
56	650	553	555	547	545	501	533	518		
55	643	548	547	542	545	507	532	525		
54	633	547	546	546	545	507	532	525		

4358 – Ready to examine for special exp.

	512				62	64	65			117	118
4357	513	520	520	Bad				Good			
56	518	520	×		590	562	547			540	518
55	513	517	×		593	562	547			557	507
54	513	520	×	Same	607	562	549	Same		566	533

4354. Grange 5 Nickels
Put in 33 Reg w ay in Chamber
Charging 15 hours 100 150 Fahr
against CP Nickel but do not
use any rubber use glass to
support the Strip. Then put in 21%
Sodk 6 hours & then chg 200 volts
deschg 100 –

Cond. 91 [illegible] 100 = 101

4355 Dup of 4354
Cond. 90 [illegible] 100 = 100

4356 " "
Cond. 92 [illegible] 100 = 103

4357 " "
Cond. 91 [illegible] 100 = 103

4358. " "
Cond. 91 [illegible] 100 = 105

4363	505	508	513	520	508	503
62	502	505	513	516	500	502
61	570	540	515	533	50	50
60	590	543	537	539	523	520
59	508	505	513	516	495	490

4363	507			60	62	63		115	116
62	503								
61	530	x	Scrap on Subcharge	547	531	522	60 mins on Subcharge	523	485
60	530	x		553	546	532		537	518
43,59	508	x		588	545	522		533	500

Done

4359. 5 Reg nickels press at 50 ahmoo heat on heat plate lower unto 33% very slowly. Then ~~[illegible]~~ allow them to Soak in 33% for 6 hours then assemble unto cells with 33% CHARGE 15 hours 100 rate at 150 Tahi, then disconnect all the nickels & soak in large jar water for 10 hours then dry on hot plate 3 hours at 125 Tahi 100 rate smooth press. 100 Corrugate 1/4 then assemble in Cells and Charge again at 200 rate for 15 hours slowly 100 rate.

Center 89 edge 100 + 111

4360 Dup of 4359

Center 89 edge [illegible]

4361 " "

Center 89 edge [illegible]

4362 " "

Center 89 edge [illegible]

4363 " "

Center 89 edge 100 + 111

4364	150	228
65	168	233
66	153	216
67	175	228
68	153	226

Over

4364 = 5 Reg nickels reversed in 33% 15 hours 100 volts 150 7 ohm. The solution having 3 grammes of Metallic Aluminum put in it it will dissolve – then charge in 21% 15 hours at 200 discharge 100 –
Center 75 [illegible]

4365 Duplt 4364
Center " Edge 104 + 105

4366 " "
Center 94 Edge 102 + 103

4367 " "
Center 94 Edge 102 + 102

4368 " "
Center 91 Edge 102 + 103

4369	397	380	377	394
70	485	462	476	475
71	388	391	407	400
72	478	457	472	465
73	472	445	460	458
	440	427	434	4362

CO

4369 ~~5 Nickels Reg put in 33% and changes 15 hours at 100 rate then change 33% & put in 21% — let it soak 12 to 15 hours + /~~

4369 - Group 5 nickels put in 33% & changes in the Cafel 15 hours at 100 rate then pour out 33% & substitute 21% let it soak for 6, hours then Change 15 hours 200 deg C 100 rate ~~[illegible]~~ CP nickel Strip & tumbler when chg in 33% —

Center [illegible] Edge [illegible] + 93

4370 Dup of 4369 [illegible] + 104

4371 " "
Center 87 Edge [illegible] + 105

4372 " "
Center 92 Edge [illegible] + 104

4373 " "
Center 90 Edge 101 + 102

		9 hrs					
4374	325	277	257	257	267	215	272
77	693	555	534	534	544	525	530
76	618	517	504	510	515	497	513
75	594	409	515	518	525	513	487
74	585	473	461	483	485	475	483
		24 hrs					

4378	228	205	212	202
77	525	525	542	512
76	492	497	518	493
75	509	500	520	495
74	482	480	478	465

Lots

4374 Group 5 Reg Nickels
CHARGED in 21% 100 rate 15 hours at 150° Fahr against CP Nickel strip then charge in Cold 21% KOH against Nickel strip 15 hours 200 rate, then assemble with rions which have been charged 24 hours 200 rate in 21% at 150° Fahr. After assembling discharge at 100 rate
Center 88 Edge 102 + 104

4375 Dup of 4374
Center 89 Edge 99 + 101

4376 " "
Center 88 Edge 100 + 102

4377 " "
Center 87 Edge 100 + 101

4378 " "
Center 87 Edge 97 + 99

4383	610	528	496	527	381	521
82	520	590	391	397	240	372
81	552	497	463	485	339	453
80	SC	452				
79	608	525	488	517	367	508

4383	517
82	367
81	450
80	[illegible]
79	503

Done

4379 Group of 5 R29 Nickels
CHARGED at 100 rate at 150° Fahr. for 15 hours against CP Nickel strip in 21% KOH
Then assemble with irons which have been Charged 24 hours 200 rate 150° Fahr.
Then the cell is to have a further charge of 15 hours 200 rate + discharge 100
Center [illegible] Edge [illegible] 97 100

4380 Dup of 4379
Center 88 Edge 101 & 102

4381 " "
Center 88 Edge 100 & 102

4382 " "
Center 88 Edge 99 & 102

4383 " "
Center 89 Edge 101 & 103

	1	2	3	4	5	6	7
4388	395	518	515	497	488	507	488
4387	413	[illegible]	525	263	497	521	510
86	418	553	547	217	491	520	50
85	443	605	567	545	540	548	535
84	275	273	267	250	247	258	273

4388	493	508	521	500			64	66	67	
87	515	514	521	513	×		552	530	527	
86	499	510	509	510	×		538	533	522	
85	538	554	558	549	×		563	543	527	
84	215	226	224	215	—					

Charged Trickler at 100 rate

Examined under Microscope Seems to exist on all accounts Edge of grid under cap Trouble

Took this apart cleaned it + sharpened Edge of Rubber to prevent lodging of particles of this in Cause + turn it again —

	119	120
4387	543	518
86	543	524
85	532	512

Done

4384 Group of 5 Reg Nickels CHARGED in 33% 150° Fahr against CP Nickel strip for 15 hours 100 rate. Then assemble with irons which have been charged 24 hours in 21% at 150° Fahr at 200 rate — The cell after assembling is to be discharged at 100 rate without any further Charging

Center 89 Edge 100 + 101

4385 Dup of 4384

Center 90 Edge 102 + 103

4386 " "

Center 89 Edge 101 + 103

4387 " "

Center 86 Edge 99 + 99

4388 " "

Center 86 Edge 98 + 100

	1	2	3	4	5	6	7
4393	583	553	540		553		523
4392	550	548	530	524		532	
91	550	544	525	525		532	
90	548	555	528	528		368	
89	580		483	479		365	

						61	63	64	
4393	5								
92	551	527	525						
91	532	524	527	x	5 minutes	594	553	547	
90	527	532	532	x	5 minutes	606	553	547	50 minutes
89				x	5 minutes	563	546	522	

	116	117
4391	555	525
90	550	525
89	544	513

4389 Group of 5 nickels CHARGED in 33% at 150° Fahr for 15 hours at 100 rate, Then put in Cold 21% soak 10 hours, then dip in against CP Nickel strip 15 hours more 200. rate. Then assemble with rows which have been CHARGED in 21% 150 Fahr, 24 hours 200 rate — After assembling discharge at 100 rate,

4390 Dup of 4389
Center 91

4391 " " "
92

4392 " "
Center

4393 " "
Center 93

4398	573	542	532		504	524	510
97	550	533	527		537	521	510
96	517	542	530		549	527	522
95	533	543	530		552	527	522
94	548	543	532		551	530	517
	544	540	530		545	525	516

		59	61	62		114	115
4396	59 same on Back	570	527	515	59 same on Endsheet	522	508
95		573	543	522		522	495
94		573	543	520		525	498

4394 Same as 4389
But with reversed perforations
Centre 92 Edge [illegible]

4395 Dup of 4394
Centre [illegible] Edge [illegible]

4396 " "
Centre [illegible] Edge 102 ← 103

4397 " "
Centre 91 Edge 103 ← 104

4398 " "
Centre [illegible] Edge 103 ← 103

4403	632	530	520	501
02	640	533	524	507
01	635	533	529	512
4400	630	533	528	508
4399	645	542	532	509
	6366			

✓

4399 GROUP of 5 Reg Nickels
to 62 put in 33% and soaked 2 hours
The put on a reverse current of 5
amperes for 10 seconds Then CHARGE
in the 33% 150 Fahr 100 rate for 15
hours - put with regular vious +
Charge 200 rate 15 hours + discharg 100
Cell [illegible]

4400 Drup of 4399
Cell [illegible]

4401 " "
Cell [illegible]

4402 " "
Cell [illegible]

4403 " "
Cell [illegible]

4408	612	605	408 ?	533	559	583	
07	612	613	582	550	566	575	
06	612	605	567	545	552	555	
05	542	612	567	553	567	571	
04	622	573	558	558	548	554	
	20	606.6	358	448	544.4	567.8	

4408	561	543		60	62	63		115	116
7	560	347?							
6	540	550	x	540	515	518	Same on Edge	483	472
5	555	563	x	540	530	550		440	453
4	527	558	x	537	512	522		467	467
	440	5[illegible]							

4404. Group of 5 nickels, made Dry mix – use the green Nickel and powder in agate Mortar very fine Then roll without water 8 & 2 of the graphite use one part recovered & one part Coarse ~~Use the same~~ Use cups with Reversed perforations. 3.2 .

CHARGE against Nickel strip in 33% 15 hours 100 rate 150° Fahr Then put in 21% KOH & soak 10 hours Then charge again 15 hours against a nickel strip. 200 rate, & assemble with irons which have been charged 24 hours 200 rate in 21% 150° Fahr & discharg 100 rate

Center 100. Edge 110 & 111

4405 Dup of 4404

Center 96 Edge 106 & 104

4406 " "

Center 96 Edge 107. & 107

4407 "

Center 98 Edge 108 & 109

4408 "

Center 96 Edge 107. & 107

[illegible] — changed this group against a C.P. strip and assembled with single T ss.

4413	422	458	467	SC
[illegible]	372	462	482	477
11	419	470	483	475
10	432	466	476	467
4409	440		465	450
	411 =	464	[illegible]	

4409 Group 5 pockets taken from a grid of Gibbs cell — put in little slide and reverse 10 hours in cold 21% Then before taking out, give the 5 pockets 10 amperes each for 10 seconds or 50 amp for the lot, then soak in 21% fresh KOH 10 hours — Chg 15 hours 200 rate & discharg 100 rate —

Center 92 + [illegible] 101 + 101

4410 Dup of 4409

Center 87 [illegible] 97 + 102

4411 " "

Center 94 [illegible] 100 + 102

4412 " "

Center 87 [illegible] 100 + 100

4413 " "

Center 87 [illegible] 98 + 98

Note – When recorrugated the discs did not fall the same as first time on 4415 + 18 – That is the depressions came on the elevations made by the first corrugating press.

4418	597	509	527	528	532	525	527	
17	583	517	524	533	536	532	533	
16	598	519	532	533	539	533	531	
15	587	513	528	[illegible]	532	522	525	
14	597	520	527	537	542	532	533	
	592.2	515.6	528	532.6	537.8	524	529.6	

4416	5 Groups	557	545	521	115 Sandwiched	525	496
15		570	516	508	116	508	473
14		574	534	521		522	485

$\frac{1249.4}{37.4}$

4414 Group 5 nickels put in Powered perforation cups soaked 24 hours in 33 at 150 Fahr, then put in large jar with water only soaked 12 hours then put on porcelain & dried on hot plate; after drying Recorrugate at 150 times.

Run Charging in 33% against a nickel strip 15 hours at 100 rate 150 Fahr. Then soak in 21% 10 hours & assemble in cells with irons that have been charged 24 hours at 200 rate, after assembling Charge in 21% 15 hours 200 rate & discharge 100 rate.

Center 90 Edge 100 + 102
99 + 105

4415 Dup of 4414

Center 91 Edge 102 + 105
99 + 99

4416 " "

" " 91 " 102 + 103
102 + 102

4417 " "

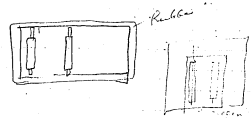
Center 93 Edge 102 + 106
93 + " 102 + 105

4418 " "

Center 92 Edge 104 + 105

Small edge – 94 101 + 102

Drop of Voltage by putting Zn & Ni pockets different distances apart,



$1\frac{1}{4}$ apart	1.113	Volts
1 "	1.127	"
3/4 "	1.136	"
1/2 "	1.143	"
1/4	1.157	"

21% Solution – [illegible]

discharge 200 Milamp

This experiment to be tried over again –

Nov 30 1904

As the difficulty of charging iron increase with the cold - so that in very cold it will not charge at all -
This is probably due to fact that decomposition of Water in KOH, is not affected near so much by cold as the reduction of O from Iron hence in cold weather we get hydrogen by action of K ion instead of K ion reducing the iron - Conversely the reducing power of K ion ~~from~~ iron should increase with the temp in a greater ratio than for water, Therefore economy of Charging & Watt efficiency of cell should increase with heat, if this is correct any resistance in liquid which would heat cell might be compensated for by increased economy & therefore get same or even better Watt efficiency
Have Warren test this & run Watt efficiency at various temp on chg & Constant temp on discharge -

Took 5 cups that have been run several times, & then 2 holes cut in bottom & put on heavy Current to get the mix out —

	Original Cups		After running		Press of mix	
4229	87	96-98	95	101-97	88	96-98
4230	85	97-100	95	98 101	86	100 96
4231	90	102 105	101	104 107	83	105 103
4232	88	100 103	95	101 104	89	99 102
4233	88	100 101	99	102-101	91	100 100.
	87.6	100.2	97.6	101.6	87.4	99.9

Center Swell 10- final. ·2 mins
Edge 1·2. final ·3 mins —

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at
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18 June 1981

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The original documents in this edition are from the archives at the Edison National Historic Site at West Orange, New Jersey.

ISBN 0-89093-703-6

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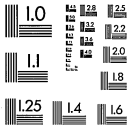

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